



ARNOLD ARBORETUM
HARVARD UNIVERSITY



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POPULAR INFORMATION

SERIES 3

VOLUME III

1929

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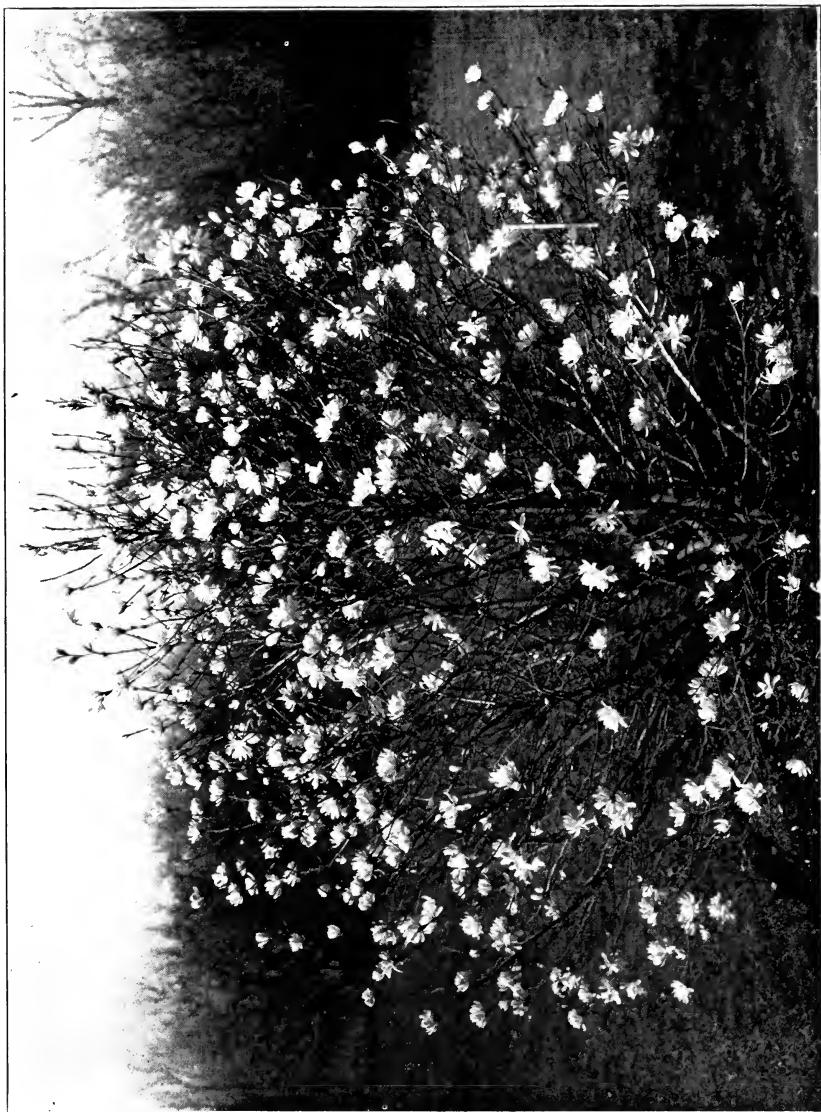
NO. 1

On April 7 and 8 the thermometer registered the abnormal temperature of 84° F. and the result was an explosive development of vegetation. On the 10th snow fell! On Saturday, April 6, the plants of *Magnolia stellata* in front of the Administration Building showed here and there in the shaggy caps which cover the flower buds slits through which white appeared. On Sunday afternoon hundreds of flowers were fully open. On Sunday the myriad buds on the Forsythia bushes showed greenish yellow. On Monday the whole mass was aglow with clear yellow. A few early blossoms on the bushes of *Rhododendron dauricum mucronulatum* on Bussey Hill were expanded on Saturday; on Monday afternoon the whole group was a billowy mass of rosy purple. The Larches in the Pinetum are pushing forth their bright green leaves and many of the branches are weighted down with male flowers, while others are strung with ruby colored female flowers. David's Peach (*Prunus Davidiana*) and its white form (*alba*) were in full blossom all last week and for almost the first time on record the flowers escaped injury by frost. At the moment the Manchurian Apricot (*Prunus mandshurica*), a broad, round-topped tree, is crowned with soft pink yellow-anthered blossoms. In the *Cornus* collection alongside Meadow Road the Cornelian Cherry (*Cornus mas*) and its Asiatic sister, *C. officinalis*, are in full bloom. Facing the Lilacs, the Benzoin (*Benzoin aestivale*) is opening its yellow blossoms and *Dirca palustris* is in full flower. In the Shrub Garden the earliest of the Honeysuckles (*Lonicera praeflorens*) is past blooming, but nearby *L. Standishii* with white, faintly tinged purple, gaping blossoms is laden with flowers. Alongside Meadow Road and in the Maple collection the Red Maple (*Acer rubrum*) is aglow with scarlet and orange-red, honey-scented blossoms. Willows are in full flower and on some species the leaves are pushing forth. Color in expanding bud and opening blossom is apparent on every hand and wherever one may stroll signs of spring are evident. It is fortunate that the heat wave was of short duration, otherwise the spring season would be short-lived. As it is the forcing effect of the high temperature of the 7th and 8th will cause many flowers to open and pass

much more quickly than they ordinarily would. After waiting through the long and dreary months of winter we are hungry for color, for fragrance, and for blossom and we feel a natural impatience when these delights are too long delayed or too quickly snatched away.

Winter Effects. From the point of view of the Arboretum, the winter has been almost ideal. There have been no long periods of low temperatures and the abundant snowfall in February came at the right time. So far as one can see the few broadleaf evergreens that can withstand this climate have wintered well. Evergreen Rhododendrons show no sign of burning and even the Oregon Grape (*Mahonia aquifolium*), which usually suffers more or less, is this year unscathed. Such ground covering plants as Heather, which last year fared badly, are this year in perfect condition. Conifers wintered well and even the Canadian Yew, which browns badly in the Arboretum, is this year much less discolored than usual. The Japanese Yew is, of course, its usual healthy black-green. Spruce, Fir, and Pine show no ill effects and the pleasure of walking through the Pinetum this April is much greater than is sometimes the case. In a general way the last three winters have been favorable to vegetation here and have given newly arrived exotic plants a chance to get acclimated. A number of Lilaes, both French hybrids and such species as *Syringa microphylla*, were unfavorably affected by the rather warm weather experienced in late autumn. The buds swelled and in many instances the incipient flowers were killed by frost. However, this is not unusual and the loss will scarcely be noticed. On the whole the deciduous shrubs and trees are well laden with flower buds and there is promise of abundant blossom.

Viburnum fragrans is a Chinese species that in recent years has been much lauded in the horticultural press of Europe. Apparently it is well-suited to the milder climate across the Atlantic and, putting forth clusters of sweetly fragrant blossoms earlier than any other species, has naturally won for itself many friends. This year for the first time it is flowering freely in the Arboretum. In the Viburnum collection near Centre Street Gate there are two plants; one is about 5 feet tall, narrow in habit with ascending branches and now covered with short, paniculate masses of rose-pink, flushed white, exceedingly fragrant blossoms. Favored by the mild weather, it is giving us a taste of what it is really capable of. For a very sheltered position or for growing against a wall, this plant is worthwhile in New England, but except in such favorable seasons as the present it is not hardy enough to stand fully exposed out-of-doors. It has been long a favorite with the Chinese, who force it into flower for their New Year season. Known since 1831, it was introduced into cultivation by William Purdom, who sent seeds to the Arboretum and to Messrs. Veitch of England in the autumn of 1910. Later the same collector accompanied Reginald Farrer through northern China to Kansu and on this expedition *V. fragrans* was also sent back to England. Where hardy, it is undoubtedly a first-class plant, but for Massachusetts it can never rival its Korean relative, *V. Carlesii*.



Pink-flowered *Magnolia stellata rosea*

Prunus apetala is first of the Cherries to open its flowers, the plant on Bussey Hill being now in full bloom. Its white petals are very fugacious and to this peculiarity the plant owes its specific name. After the petals have fallen the calyx becomes vinous red and persists for quite a long time. The species is fairly abundant in thickets and margins of woods throughout central Japan up to an altitude of 3,000 feet above sea-level. It is a twiggy plant with hairy leaves, twice or thrice serrate along the margins. It is not particularly ornamental but if the clustered green bracts which subtend the flowers be examined through a pocket lens they will be seen to be so densely clothed with gland-tipped hairs as to resemble leaves of the Sundew. It has been known since about 1843 but was not introduced into cultivation until 1914 when E. H. Wilson sent small plants and scions from Nikko.

Corylopsis Gotoana on Centre Street Path is now strung with pendent racemes of greenish yellow, delightfully fragrant blossoms. For several years past in these bulletins mention has been made of this shrub, and the more we know of it the more its first-class qualities become evident; it bids fair to rank among the indispensables. *Corylopsis* are spring flowering shrubs, but this species has the advantage of being the hardiest and most free growing. Introduced into the Arboretum through seeds sent from Japan in 1905 by J. G. Jack, this plant has never known winter injury. At first it blossomed sparingly but with age and size it is now as free flowering as any member of its tribe. Our largest plant is about 10 feet tall and 12 feet through and well-worth a visit to behold. The *Corylopsis* belongs to the Witch-Hazel family, whose members rank among the most useful and interesting of hardy shrubs for they are the first flowers of spring and the last flowers of autumn to be put forth by any woody plant in the climate of Massachusetts.

Euptelea polyandra is a large bush or bushy tree native of Japan and rarely seen in cultivation. It is not a plant to recommend for the ordinary garden and yet it is not without peculiar charm. On Bussey Hill, near Kaempfer's Azalea, are two large bushes of this plant whose branches are now decked with pendent clusters of reddish brown stamens at the base of which nestle a small greenish, wedge-shaped pistil. After the pollen is shed the pistil will elongate. Before the flowers open the buds are shining black and no plant in the Arboretum collections has more beautiful winter buds than this *Euptelea*. It is a curious aberrant type of which three species only are known, all confined to the Far East. At one time botanists placed it among the Magnolias as an anomalous member of the family.

Magnolia stellata rosea is a pink-flowered form of the well-known Star Magnolia and is all too rarely seen in gardens. In bud the flowers are a deep pink but as they open they bleach and become almost white. In habit and hardiness it is similar to the type to which it is a worthy companion.

E. H. W.

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NO. 2

The atrocious weather of the last two weeks had a disastrous effect on plants that happened to be in full blossom. Plants may be very hardy but it is not to be expected that their tender blossoms can withstand snow, sleet, hail, several degrees of frost, and high winds. Often as not the first flowers of spring suffer for their daring but this year they have been punished most severely. When the first Bulletin went to press two weeks ago the group of *Rhododendron dauricum mucronulatum* on Bussey Hill was a wealth of rosy purple, thousands of blossoms being fully open; the Star Magnolias in front of the Administration Building were sheeted in white and the Manchurian Apricot was in full bloom. Before the Bulletin appeared in type every expanded blossom had been destroyed. Not before have the flowers on *R. dauricum mucronulatum* suffered so severely as this year; every open or partially open flower was absolutely ruined. The Magnolia blossoms were browned and resembled sodden, brown tissue paper, and the flowers on the Manchurian Apricot were killed. The Forsythias, whose blossoms are accustomed to a good deal of buffeting each spring, have suffered far more than is usual and their luster and beauty has gone from them, although late unexpanded buds are now doing their best to enliven the branches. Fortunately, only a few subjects had burst into bloom, otherwise the tale of woe would have been even sadder. The return to cold, boisterous, and stormy weather has had a retarding influence on all vegetation. It has also greatly hindered spring work; much of the land in the Arboretum lies low and this has been flooded, making it impossible to do any transplanting or even to cultivate the ground. The probability is that this stormy spell will be followed by hot weather which means that the spring season will be unusually short. The unseemly weather has had the curious effect of advancing the blossoming period of some plants while retarding that of the majority. For example, on Bussey Hill a Pear-tree (*Pyrus ussuriensis*) is in full blossom preceding instead of its usual practice of succeeding the earliest flowering Cherry. In the Arboretum the first blossoms are just opening on the Sargent Cherry; at North Easton, which in spring

is usually a week behind us, this Cherry is in full bloom and, so too, is it across the Parkway from the Arboretum. While the Cherry blossoms have remained virtually at a standstill during the past two weeks the buds on the Lilac bushes have grown considerably and there is great promise of a fine crop of flowers. After a careful survey it is comforting to note that although the first flowers of spring have had a rude awakening and suffered heavily for their haste no material damage has been done to those which had not progressed beyond the bud stage. If from now on normally decent weather prevails, there will yet be a rich harvest of spring flowers.

In the Orient flowering Cherries in variety are a feature of wayside thickets and woodlands, and are among the most pleasing features of early spring. Not only in Japan are flowering Cherries a conspicuous feature of the forest flora, but in Korea and the temperate parts of China also. Japan has so largely supplied us with Cherry trees that we are apt to forget that they also grow in the neighboring countries. As a matter of fact, the first Oriental Cherry to be grown in western gardens was introduced from Canton, China. This was in 1819 and it was named *Prunus pseudoerasus*. In 1882 a second species, afterwards named *P. serrulata*, was also sent to England from Canton. The first-named has single flowers and is the common, edible Cherry of China. Unfortunately, it grows in warm or moderately warm districts and has not proved hardy except in very favored locations. The early importations quickly disappeared from gardens and subsequent introductions, except a notable example in the Botanic Gardens, Cambridge, England, have succumbed to the western climate. The cultivation of this species in Massachusetts is out of the question but it is now growing at Chico and elsewhere in California. The second plant (*P. serrulata*) has double white flowers and this has persisted in cultivation down to the present time, although it never appears to have become common. Soon after 1850 flowering Cherries from Japan began to reach Europe and, in the early sixties, this country and they quickly superseded the Chinese sorts. It must be confessed, however, that this was due to frequent importations rather than to the successful cultivation of these trees. Today, most of the Oriental flowering Cherries in cultivation in this country are of Japanese origin. One or two of the species, however, are widespread in the Far East and these together with species recently discovered in central China are now gradually becoming known to western gardens. On the whole, few, if any, of the Chinese species promise to rival in beauty their Japanese brethren.

Chinese Cherries. *Prunus cyclamina* is a tree from 20 to 35 feet tall with a moderately thick trunk and a spreading crown of slender branches, common in thickets and in thin Oak woods on the mountains of Hupeh, central China. The deep pink flowers, each about an inch in diameter, are produced in great abundance in clusters on the naked shoots. The sepals are strongly reflexed, while the yellow-anthered stamens are prominently thrust forward. The unfolding leaves are bronze-green and appear after or at the same time as



Mt. Fuji Cherry (*Prunus incisa*)

the blossoms open. Another woodland species common in central China is *P. pilosiuscula*. This is a low, bushy tree with slender branches, abundant white flushed pink blossoms, prominent stamens, reflexed sepals and bronze-green, unfolding foliage. It is one of the hardiest species and for many years past has flowered freely in the Arboretum. A lovely plant is *P. concinna* with relatively large, pure white faintly stained with pink, blossoms. The flowers, each from 1 inch to 1½ inches in diameter, are crowded in fascicles along the naked shoots. The bronze-colored calyx has ascending-spreading sepals and each petal is deeply emarginate. This Cherry is native of the thickets and the margins of the woods on the mountains of western Hupeh, where it is usually a bush seldom exceeding 10 feet in height; occasionally it forms a small and slender tree. These three species of Chinese flowering Cherries were discovered and introduced into cultivation by E. H. Wilson and are now in blossom on Bussey Hill.

Japanese Cherries. Just within Forest Hills Gate and on Bussey Hill the Japanese Cherries are bearing their usual abundant crop of blossoms. Unless unpropitious weather prevails the single flowered forms will be at their best when this Bulletin reaches its readers. Owing probably to the cool weather the blossoms of the Sargent Cherry (*P. serrulata sachalinensis*) are this year unusually deep pink in color. The Spring Cherry (*P. subhirtella*) is as lovely as usual and, so too, is the less hardy Tokyo Cherry (*P. yedoensis*). The so-called October-flowering Cherry (*P. subhirtella autumnalis*), which last autumn flowered sparingly, is this spring bearing an unusually large quantity of its pleasing semi-double pink passing to white blossoms. This is really a first-class plant and one which ought to be widely known; although the flowers are semi-double, it frequently produces fruit. The Mt. Fuji Cherry (*P. incisa*) has been often mentioned in these Bulletins and each year its merits become more and more apparent. It is absolutely hardy and no Cherry is more floriferous. The flowers are pure white and after the petals fall the calyx becomes reddish and continues to be attractive for many days. This is a bush or small tree particularly abundant on the lower slopes of sacred Mt. Fuji. It was discovered so long ago as 1776 by Carl P. Thunberg but was not introduced into western gardens until after the dawn of the twentieth century. It was first received at the Arboretum from H. A. Hesse, Weener, Germany, in April 1912, under the erroneous name of *P. pseudocerasus*. The single flowered Cherries mentioned here with the exception of *P. subhirtella* are easily raised from seeds, which is the simplest and the most satisfactory method of increase. With the exercise of a little patience there is no difficulty in raising them from seeds and in a few years a good stock of healthy, vigorous plants is available. On their own roots these Cherries grow readily and live long. They are good species, with their characters fixed, and there is nothing to gain but much to lose in attempting to propagate them other than by the natural method of seeds.

E. H. W.

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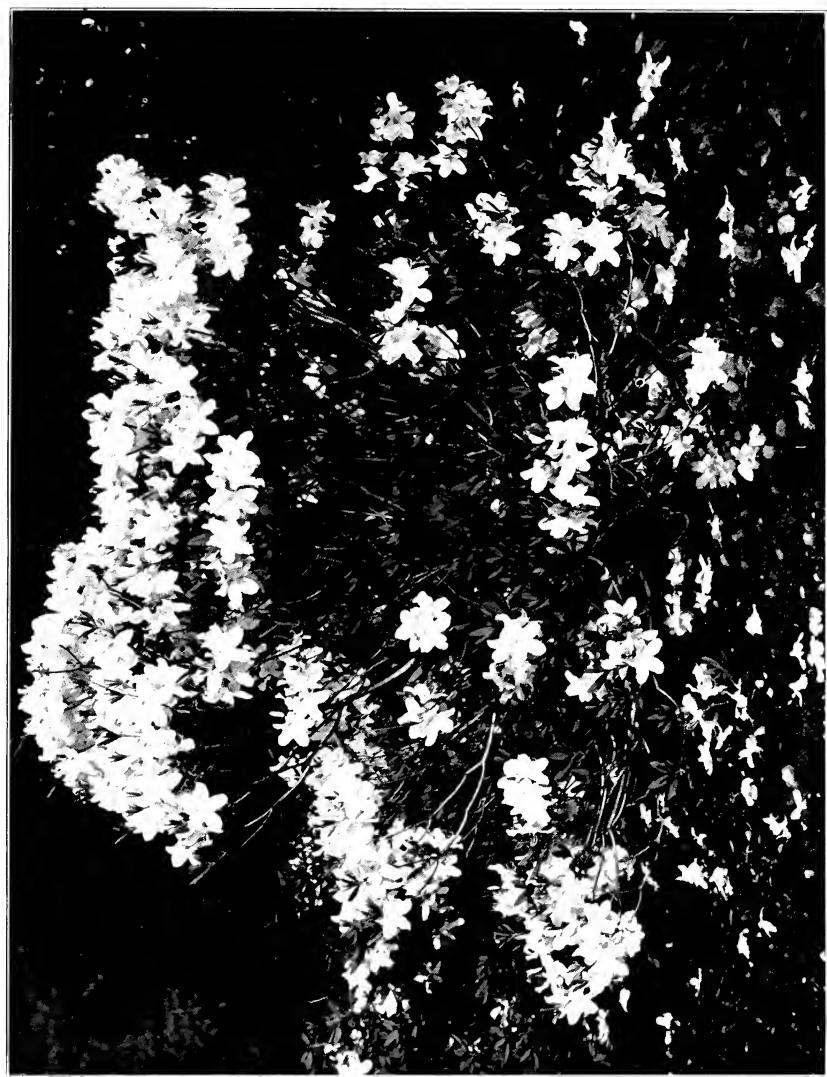
NO. 3

Flowers are opening rapidly; the Chinese Almond (*Prunus triloba*) in its several forms and the Nanking Cherry (*P. tomentosa*) are in full blossom just within the Forest Hills Gate, and so, too, are other bushes of the same plants on Bussey Hill. Several Asiatic species of Pear trees are in full bloom and Cherry blossoms in variety are opening and making a brave display at Forest Hills entrance and on Bussey Hill. In the Shrub Garden, *Lonicera tenuipes* is covered with its small deep pink blossoms and the Canadian Plum (*Prunus nigra*) is in flower. Magnolias in front of the Administration Building are still in bloom and alongside the roads and the margins of woods the Shadblows are fast being muslined in white and Yellow-root (*Zanthorrhiza apiifolia*) is a dull cloud of lurid purple. The Leather-wood (*Direa palustris*) is past flowering but the naked shoots of the Spicebush (*Benzoin aestivale*) are studded with clustered blossoms. In early spring the young unfolding foliage of many plants is of a reddish hue. Particularly noticeable in this respect is the young foliage of *Cercidiphyllum japonicum*, *Amelanchier laevis*, the Sargent Cherry, Highbush Blueberry, several Viburnums and of many herbs. No one can fail to notice this phenomenon though probably most accept it as a matter of course. This ruddy tinted foliage is due to the presence in the cell sap of a coloring substance, known technically as anthocyanin, which in the presence of free acids assumes a reddish tone. Its function at this particular season is to mask and thus protect the green coloring bodies of the young leaves from the damaging effects of strong sunlight. The observant will have noticed that this ruddy hued spring foliage is evanescent in character. So soon as the leaves enlarge and become moderately firm in texture they assume their wonted green color and the red mask completely disappears. The appearance and disappearances of anthocyanin is an expression of the chemical changes that are constantly proceeding in the leaves, and to its presence in bark and young unfolding leaf spring owes much of its color warmth.

The shortening of the spring planting season, due to unfavorable weather, again draws attention to the importance of more planting

work being done during the autumn months. Last September some hundreds of Conifers were transplanted in the Arboretum. These were given a surface mulch of farmyard manure and one and all have passed through the winter unscathed. During the latter half of October and throughout November the Spiraea and Deutzia collections were remodelled and in addition a large number of miscellaneous trees and shrubs were moved. These, too, were mulched and like their evergreen brethren have suffered no ill effects. For full three months of the autumn the moving of plants was steadily pursued in the Arboretum and the results are wholly satisfactory. Indeed, had the work not been done at that time it would have been quite impossible to carry it out. It is evident that if proper care be exercised, fall planting can be successfully conducted in the climate of Massachusetts, opinions to the contrary notwithstanding. In a normal season April is really the only spring month in which deciduous-leaved trees and shrubs can be transplanted in Massachusetts, and the period is all too short for work on a large scale to be carried out, so the more done in autumn the better.

The Norway Maple (*Acer platanoides*) at the moment is very conspicuous on account of its wealth of bright, greenish yellow blossoms which are borne in upright, more or less bell-shaped cymose corymbs at the end of every branchlet. So floriferous is this tree and so showy its blossoms that it might be recommended as a flowering tree were its uses not greater in other directions. The Norway Maple is a handsome tree, growing from 75 to 90 feet tall with a stout trunk, thick branches and a broad rounded or dome-shaped crown. It has large, palmately, 5-lobed leaves, rich green throughout the summer and in the autumn changing to clear yellow. It thrives in eastern North America, where it has been abundantly planted. Too much so in fact, for many miles of country highways are planted with this tree for no other reason than that it was easily obtainable from the nurserymen. For suburban districts it is to be recommended but not for cities and certainly not for country highways. An abomination in the sight of all tree lovers is to be seen between Greenfield and Northampton, Mass., where miles of the highway are lined by round-topped, mutilated specimens of this Norway Maple. For the formal garden, trees which will stand clipping and molding into vegetable solids have a use and for this purpose the Norway Maple can be used but to treat it thus and plant it along the way-side is an offence against good taste. Another European Maple of large size is *A. pseudoplatanus*, the Sycamore Maple. As a rule this has a short trunk clothed with scaling gray bark, showing pale brown on the underside, and a broad flattened round crown made up of massive branches. The leaves are palmately 5-lobed, about 6 inches across, deep dark green on the upper surface and gray on the underside. The flowers are borne in pendent, tail-like clusters and are much less showy than those of the Norway Maple. The value of this tree to American gardens is largely because it thrives well in exposed situations near the seashore. Indeed, it is one of the very best of all trees to plant as a windbreak for shore gardens along



Pink-flowered *Rhododendron Schlippenbachii*

the New England coast. Of both the Sycamore Maple and Norway Maple there are many garden forms—some with upright branches, some with purple, others with variegated and differently incised leaves. To those fond of the curious some of the varieties are worthwhile but for practical purposes the typical trees are best.

The Oshima Cherry (*Prunus Lannesiana albida*) is now in blossom on Bussey Hill. This is one of the principal parents of the double-flowered Japanese Cherries, but unfortunately is less hardy than some of the others. It has pure white blossoms, each about 1½ inches in diameter, borne several together in fascicles crowded toward the ends of the branches. The flowers are pleasingly fragrant, being reminiscent of almonds. This Cherry is native of the warmer parts of Japan, being common on Oshima or De Vries Island, which is little more than an active volcano. Southward on the volcanic Seven Isles of Idzu it is also very plentiful. It is not a tall tree, seldom exceeding 45 feet in height, but has a wide-spreading crown and on Oshima Island there are specimens with trunks more than 20 feet in girth. As usually seen in Japan, however, it is a tree of medium size recognized by its pale comparatively smooth bark. Not before has it blossomed so freely in the Arboretum as this year, due probably to the mildness of the winter.

Prunus serrulata spontanea is the common Cherry on the mountains of central and southern Japan, southern Korea and the temperate parts of central China. It is a tree smaller in all its parts than its northern form, the Sargent Cherry, but not one whit less beautiful. Its branches are twiggy, very numerous and form a vase-shaped or rounded crown sometimes 20 feet through. The flowers are smaller than those of the Sargent Cherry but are produced in the greatest profusion. On Bussey Hill this Cherry is just opening its blossoms; there is also a specimen just within the Forest Hills Gate and others up on Peters Hill. The particular specimens blossoming were raised from seeds collected in central China by E. H. Wilson in 1907. For many years past they have flowered abundantly each season after those of its northern relative, the Sargent Cherry are past. Southern types require more heat to bring them into leaf and blossom than do boreal forms; this is why the more northern trees are earliest in pushing forth flower and leaf.

Rhododendron Schlippenbachii on Bussey Hill is now opening its first flowers. This is a sturdy Azalea with relatively stout, ascending stems, and clusters of large, funnel-form, pure pink blossoms. It is a native of the mountains of Korea, being very abundant in certain districts and it also occurs on two isolated mountains in Japan. Discovered in 1854 by Baron Alexander von Schlippenbach, after whom it was named, it was not introduced into cultivation until 1893. In the Arboretum it has been growing since 1905. Of slow growth, it has proved perfectly hardy but experience has taught us that early autumn is the best season of the year in which to transplant this Azalea.

E. H. W.

ARNOLD ARBORETUM
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NO. 4

Bussey Hill is the heart of the Arboretum. From its summit, looking in any direction, extensive views of the Arboretum may be had—with the City of Boston clearly seen in the distance and the Blue Hills in the opposite direction. Around the crown of the hill a rich collection of the newer Chinese plants is accommodated and this is augmented by mass plantings of Azaleas in which every hardy species and variety is well represented. A collection of Japanese Cherries, both single and double-flowered, with Asiatic Pears and Crabapples stud the grassy knoll and help to complete the picture. From the dawn of spring to late autumn there is something of unusual interest to be seen on Bussey Hill. At the moment the Japanese Cherries are the center of attraction. The single forms are at the height of their beauty and will be followed in a few days by the double-flowered sorts, whose tasseled masses of rose-like flowers possess an irresistible charm not always present in double blossoms. The plants are grafted on understocks of the Sargent Cherry and are proof of the value of this Cherry for the purpose. The trees make a good growth every year and unlike their relatives, the Crabapples, do not appear to have off seasons for flowering. This is probably due to the fact that they are not handicapped by the exhausting effect of bearing a display of fruits. So far as memory serves, these Cherries are about as full of blossom this year as they were last, indeed, it would be difficult to place more blossoms on the branches. The site is windswept and for this reason and also in order not to obstruct the general view the aim of the Arboretum is to keep the plants low with spreading crowns, this is accomplished by shortening the more vigorous shoots so soon as the flowers are past. The single forms with white blossoms are chiefly sports and selections from the Oshima Cherry (*P. Lannesiana*). A few of the double-flowered forms such as Sirotae and Gioiko are also products of the Oshima Cherry, but most of the double sorts planted here are sports of the well-known Sargent Cherry (*P. serrulata sachalinensis*). The number of these forms is limited but they readily rank as the finest of the whole group of Japanese double-flowering Cherries. One of the

very best is Fugenzo, better known as James H. Veitch, a free flowering double pink form. Somewhat later and of a richer color is Sekiyama or Kanzan, the finest of all the colored forms. Unusually lovely is Albo-rosea, whose blossoms, pink in the bud, are almost pure white when fully open, and hang in clusters along the whole length of the branches. This, like all the double forms of the Sargent Cherry, is very hardy and it has never suffered winter injury in the Arboretum. In the single-flowered Cherries the blossoms are very fugitive and when strong winds prevail, as have been the case this spring, they seldom last more than four or five days. In the double-flowered forms the petals are more tenacious and last in good condition from ten days to a fortnight. Moreover, as they blossom after the single forms are past they lengthen the Cherry blossom season, which in normal years lasts in the Arboretum for about three weeks.

Forest Hills Entrance continues gay with blossom. The Pear trees are particularly full and so, too, are several of the Crabapple trees, while near the small pond the European Cherries (*P. Cerasus* and *P. avium*) and their forms are laden with pure white blossoms. The October-flowering Cherry, mentioned in the Bulletin of April 27th, still boasts many blossoms. The lasting qualities of the flowers on this particular Cherry is amazing, especially when one considers the gales that they have endured since they opened during the last week in April. The large tree of *Malus spectabilis*, which last year carried few blossoms, is this year abundantly laden, and so, too, are the trees of the Cherry Crabapple (*M. robusta*) nearby. Perhaps the most striking Crabapple, however, is *M. theifera* with its out-thrust branches few in number clad with flowers from base to summit. The habit of this particular tree is decidedly picturesque and in beauty of blossom it is not exceeded by any of its relatives. It is a good species and unlike the rank and file of Crabapples comes true from seed. It has been frequently mentioned in these Bulletins and every year its ornamental qualities become more and more impressive. Unfortunately, its fruits have little color though they are eagerly eaten by birds after they have been frosted.

Asiatic Crabapples will be at the height of their beauty when this Bulletin reaches its readers. The main collection, which is accommodated at the foot of Peters Hill, a couple of hundred yards within the Bussey Street Gate, is not flowering so abundantly this year as last, not more than half the trees are blooming. Last year a larger number of trees blossomed but seldom if ever does it happen that all the trees flower freely in any one season. Their free fruiting qualities exercise an exhausting effect and the trees really have to take a year off to recuperate. An exception to this general rule appears to be the Manchurian Crabapple (*Malus baccata mandshurica*) which is the first of the tribe to burst into bloom bearing large pure white fragrant flowers freely each and every season. It is as full this year as it was last and has been equally floriferous for the last five or six seasons. All the forms of *M. floribunda* are flowering



One of the best double-flowered Cherries, *Prunus serrulata albo-rosea*

and so, too, is the single pink blossomed *M. micromalus* and the Parkman Crabapple (*M. Halliana*) with semi-double rose-pink flowers. The forms of the Siberian Crabapple with few exceptions are not flowering this year. Strange to say, the Crabapples in the supplementary collection near the Forest Hills Gate and those growing here and there in the Arboretum are abundantly laden with flowers, the seedling forms of *M. floribunda* near the Administration Building being particularly fine. Last year was their off season.

Malus purpurea is a comparatively new Crabapple of hybrid origin, which first appeared in France about 1900, and whose parents are supposed to be the Carmine Crabapple (*M. atrosanguinea*) and the purple leaved variety of the Common Apple (*M. pumila Niedzwetzkyana*). It is more free growing than either parent and produces in quantity bright reddish purple blossoms. The leaves have a purplish hue and the wood itself is stained with red-purple, characters which it inherits from its part-parent, the purple form of the Common Apple. It is really a first-class plant and one which ought to be widely planted. It is better colored and its flowers are more perfect in form than those of its parents. This would appear to be the oldest of the hybrids of this race but newer forms such as (*M. purpurea Eleyi* and *M. purpurea aldenhamensis*) are popular in Europe. A similar race of hybrids has been developed by Professor Carl A. Hansen, Brookings, S. D., and his Hopa Crabapple is a really delightful plant, bearing flowers of a pleasing shade of reddish purple. All Crabapples are worthwhile plants, most of them being remarkable for their hardiness and all for their free blossoming qualities. They may be grown wherever the Common Apple flourishes and they love sunshine and free exposure to the wind.

Viburnum alnifolium is a lovely native shrub much neglected in gardens and difficult to obtain from nurserymen. It is native of mountain woodlands and copses from New Brunswick west to Michigan and south to North Carolina and is first of native shrubs with conspicuous white flowers to blossom. It is a sparsely branched shrub growing from 6 to 9 feet tall with stout shoots and handsome, ovate-cordate leaves, dark green and deeply wrinkled on the upper surface with many prominent nerves on the under surface. The flowers are borne in terminal flattened clusters, each from 2 to 4 inches in diameter, bearing on the outer edge an interrupted ring of large pure white neuter flowers. The central flowers are small, tubular, with prominent greenish yellow anthers. Its clustered flowers are conspicuous from a distance and appearing as they do when most vegetation is bare of foliage they light up the woodland landscape. Like many another waif of the woods it does not transplant readily neither is it easy to establish in gardens. A moist situation suits it best although the oldest plant in the Arboretum is that on a dry bank. There is many an exotic treasured in gardens and offered for sale by nurserymen which is far less beautiful and desirable than the native Hobble-bush or American Way-faring tree, to give its common names.

E. H. W.

ARNOLD ARBORETUM
HARVARD UNIVERSITY

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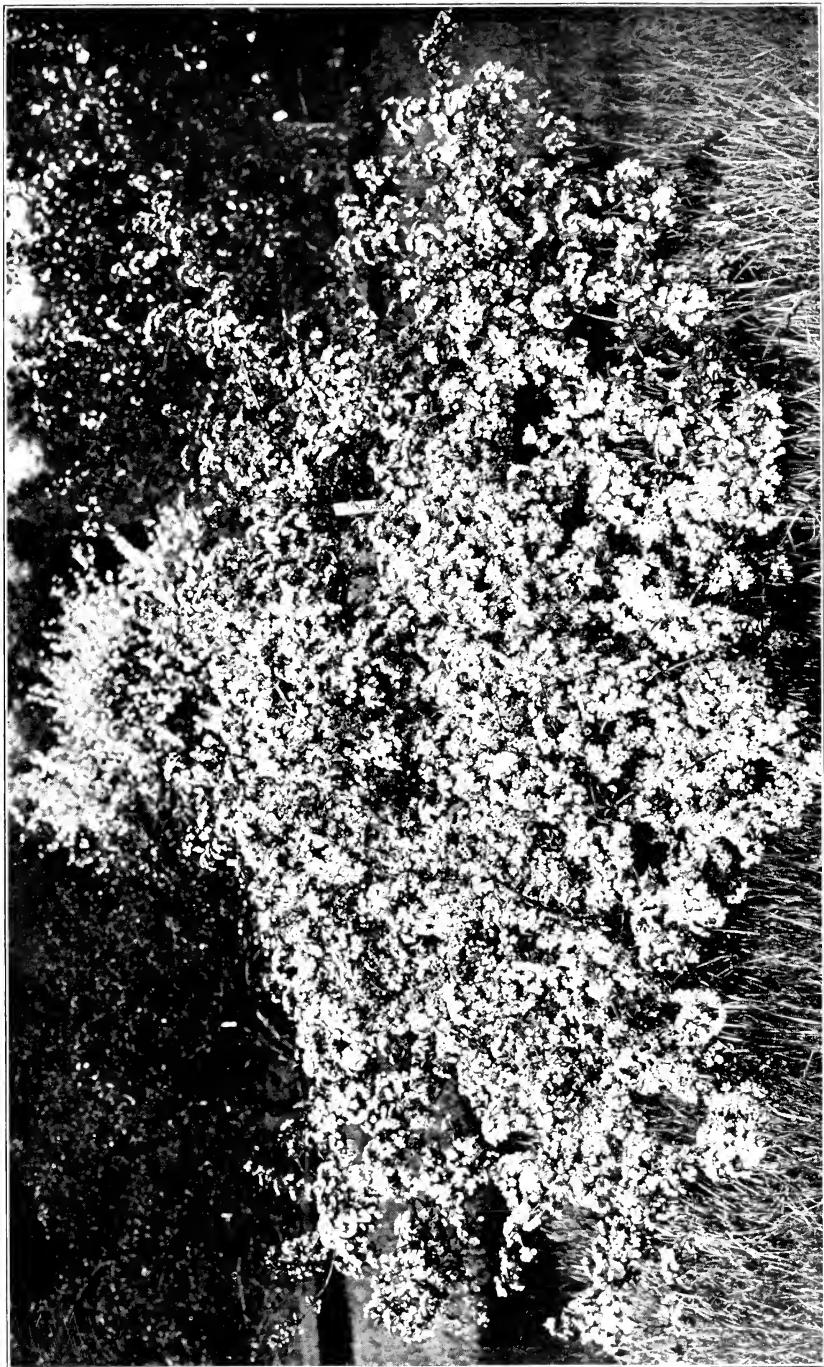
NO. 5

The Arboretum is perhaps as beautiful at the present moment as at any time of the year. Nearly all the trees are just pushing into growth and among the young unfolding leaves every shade of green is present and in contrast there are the grays, pinks, and ruddy browns of the Oaks' expanding buds. The tracery of the branches is not yet hidden and the crowns of all the deciduous trees look light and airy. There is also a good deal of blossom to be seen no matter where one may walk. The collections of the Arboretum represent in epitome the woody flora of northern lands and the beauty of the arborecent wealth of the boreal regions of Europe, Asia, and North America invites the visitor. Not least at the moment is the Flowering Dogwood, one of the most delightful of the smaller trees of North America. Rarely is it that Massachusetts enjoys for two seasons in succession the Flowering Dogwood in all its beauty. Thanks to the mild winters, the Dogwood was splendid last season and it promises to be equally good this year. People who live on Long Island and southward are accustomed to an annual display of white saucers on their Dogwood trees, but here the free blossoming is only occasional and when it happens it is an event worth noting. In the Arboretum this Dogwood has been freely planted alongside the drives and on the margins of woodlands, where at the moment it is conspicuous. A worthy companion is the Redbud (*Cercis canadensis*), whose clustered rose-purple, pea-like blossoms stud the naked branches. For associating with the Flowering Dogwood in thicket and margin of woodland there is no better flowering tree. The color is not all that could be desired but from a distance and when neighbored by white it is very effective. Its specific name notwithstanding, the plant never knew Canada as a wild tree, for it is not indigenous north of the state of New Jersey.

Bussey Hill remains the center of attraction. Many of the double flowered Japanese Cherries are still at the height of beauty. Several Hawthorns are in blossom and Wilson's Pearl bush (*Exochorda Giraldii Wilsonii*) is a sheaf of the purest white; *Rhododendron Schlippenbachii* is still beautifully in flower. Some of the early

Cytisus and Barberries are expanding their blossoms, and the flower buds are swelling on screes of other shrubs. The most conspicuous plant at the moment is perhaps the Korean Azalea (*Rhododendron yedoense poukhanense*), bearing thousands of fully expanded rosy purple, exquisitely fragrant blooms. Many people object to the color but when massed together they are certainly a compelling sight and the odor is as sweet as that of any hardy flower. This Azalea is a very hardy shrub of excellent habit, low-growing, twiggy and well-suited for massing. It was introduced into cultivation by seeds collected in Korea in 1895 by Mr. J. G. Jack and has never known winter injury in the Arboretum. The largest plants are now about 5 feet high and much more in diameter and each year completely hide themselves in flowers. Beneath the old White Pines, whose picturesque appearance adds so much to the landscape, the Torch Azalea (*R. obtusum Kaempferi*) is opening a myriad dazzling flowers. This is really an astonishing plant; year after year it puts forth such a profusion of blossoms that one marvels that it does not die from sheer exhaustion, and musing on this Azalea one wonders how so much beauty can withstand the fierceness of the New England climate. Introduced into cultivation in 1892 by seeds collected in Japan by Professor C. S. Sargent, this plant ranks among flowering shrubs as one of the very best gifts that has come to the shores of Massachusetts Bay. For some years after its arrival fears as to its hardiness were freely expressed but these have long since vanished and the plant is one of the hardiest of all Azaleas. The flowers vary a good deal in shade of color, ranging from salmon to a brick red but they blend well one with another. For the best effect this plant should be thickly massed. In youth it is of spindly habit but it quickly improves and becomes an intricately branched flattened bush, usually from 4 to 5 feet tall and as broad. Under the shade of trees it grows taller and is in habit less compact but the flowers keep their color under those conditions better than when fully exposed to the sun. Good air and root drainage are essential and granted these the plant is perfectly happy in this part of Massachusetts and in similar regions where an acid soil prevails. Just beyond the thicket of Torch Azaleas the Pontic Azalea (*R. luteum*) is opening its yellow fragrant flowers. Less hardy than the species mentioned before, this plant has benefited from the last two mild winters and the several bushes are now a wealth of blossom. This Azalea is native of the mountains bordering the Black Sea and it also occurs in one or two isolated parts of central Europe. It has been much used by the hybridist for crossing with different American species and has given rise to the Ghent Azaleas, a race of beautiful multicolored plants, unfortunately, scarcely hardy and not long-lived in this part of Massachusetts. The above Azaleas may all be seen in blossom on the slopes of Bussey Hill, but mention must be made of two groups of *Rhododendron Vaseyi* on either side of Meadow Road. This, the most winsome of all Azaleas, is just opening its pure pink blossoms.

Berberis Dielsiana is one of the best of the Chinese Barberries and one of the earliest to blossom. It is a dense, much-branched bush,



The low-growing Sargent Crabapple (*Malus Sargentii*)

8 feet or more tall and much more in diameter, with ascending arching shoots forming a fountain-like mass. The leaves are dark green, narrow, oblanceolate in shape and each about 2 inches long. The flowers hang in slender racemose clusters from every joint along the shoot and in the autumn the stems are strung with ovoid scarlet berries. This Barberry is native of the province of Shensi, China, where it was discovered by Padre G. Giraldi about 1892; it was introduced into cultivation by seeds sent by William Purdom in 1911 to the Arboretum.

Berberis verruculosa is one of the very few evergreen Barberries that can be grown in the Arboretum. Strictly speaking, the climate in the neighborhood of Boston is a little too cold for this plant's well-being but on Cape Cod and south, where the influence of the Gulf Stream is manifest, it is perfectly happy. It is a low-growing, much branched twiggy shrub, with branches overlapping one another to form a dense mound, clothed with lance-shaped leaves, each about 1 inch long, glossy green on the upper surface and glaucous on the underside. The clear yellow flowers hang singly from the axils of the leaves and are followed in the autumn by bloomly blue-black fruits. The branches are covered by tiny warts, hence its specific name. It is native of Hupeh in central China, where it was discovered on humus-clad rocks in open woods and introduced into cultivation in 1900 by E. H. Wilson. For a shady spot, particularly in the rockery, this Barberry is a most delightful subject.

Malus Sargentii. Of the low-growing Crabapples this is easily the best with its rigid spreading branches sometimes 6 or 8 feet long and flowers, tinged with pink in the bud, pure white and saucer-shaped when open and borne several together in umbels. Like all the tribe, it is exceedingly free-flowering and this year it is particularly good, both at Forest Hills entrance and in the Crabapple collection at the foot of Peters Hill. When raised from seeds only a percentage of the plants are dwarf in habit, the tendency being to revert to an upright bushy type, a form by no means so useful or pleasing in gardens. The desired low-growing spreading habit of this plant may be induced by severe pruning when young. It was discovered in 1892 and introduced into cultivation from northern Japan by the late Director of the Arboretum, whose name it worthily commemorates.

Prunus glandulosa, the Flowering Almond, one of the earliest of Oriental plants to reach western gardens, is a native of China and Japan, where it has been cultivated from immemorial time. The typical form has simple white flowers strung along the whole length of its upright twiggy shoots but under cultivation forms with pink blossoms and others with double flowers have appeared. In old gardens here and there in New England the double white and double pink form of this plant are often seen in abundant blossom. It is of twiggy habit, seldom exceeding 3 or 4 feet in height, and if left alone perpetuates itself by suckering freely.

E. H. W

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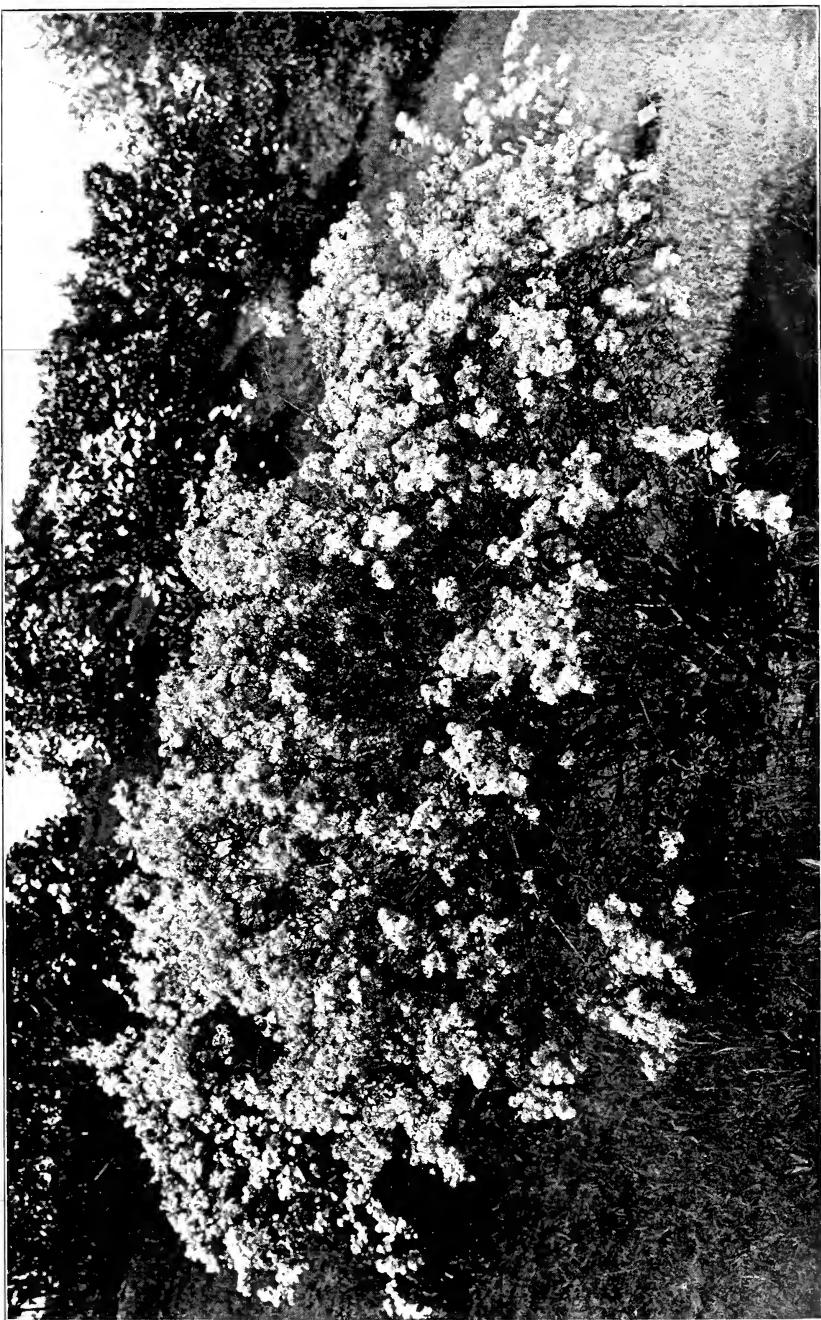
Now is Lilac time in the Arboretum. On a sloping bank on the left hand side of Bussey Hill Road, entering from the Forest Hills Gate, several hundreds of Lilac bushes are putting forth their blossoms. Of the twenty-eight recognized species of Lilac twenty may be seen growing there and with them about 150 named varieties that have originated in gardens. There also may be seen the parents of the Common Lilac with the improved varieties which have resulted from the skill of plant breeders in France, in Germany, and in this country. The Lilac is the favorite flowering shrub of the people of this part of America and every year they flock in thousands to the feast of blossom the Arboretum affords. Perfect hardiness, suitability to the climate, abundant blossoms, and pleasing fragrance are the attributes of this most excellent plant. The flowers may be single or double, pure white or varying in color from pale lilac-purple and almost pink to rich shades of purplish crimson; in some they are nearly blue. The shades grade imperceptibly into one another and the English language is not rich enough to define the color tones exactly. Neither do the different color charts help much since without having one in hand to match the blossoms the terms employed are meaningless. The flowers, hundreds together, are borne in more or less upright thyrsoid panicles each often a foot or more tall, and in a well-flowered bush every shoot terminates in a cluster. Forms of the Common Lilac are exceedingly numerous and every year sees them added to, although it is doubtful if many are real improvements on existing sorts. In no flower does personal taste play a more important part and the only way to make a satisfactory selection is for those interested to visit the collection and jot down the names of the sorts that most appeal to them.

Lilacs are of simple culture but they demand a rich, well-drained soil. The so-called French hybrids, which are selections and seminal variants of the Common Lilac, in particular will not flourish in a situation where the roots are waterlogged during the winter months. Good air and root drainage are essential; they love a rich loamy soil and enjoy lime. If the latter be naturally absent, it can be added in the

form of bonemeal. This and well-rotted cowdung are the best fertilizers. So soon as the flowers are past they should be cut away so as not to hinder the growth; at the same time any pruning necessary to keep the bushes shapely should be done. If, however, the plants through neglect become thin and scrawny, they should be cut to the ground in the early spring so that they may enjoy the advantage of a full season in which to grow. Such treatment is drastic and should not be undertaken except when necessity demands and it must be remembered that for the bushes to recuperate, a couple of years at least will be necessary. With such severely pruned Lilacs, cultivation and feeding will hasten their rehabilitation. The Common Lilac has been a favorite flower with western people for several centuries. It was first found in cultivation in Constantinople so long ago as 1554 and about 1563 was carried to Vienna from whence it spread throughout Europe. How or by whom it was taken to Constantinople is a mystery and it was not until 1828 that it was discovered in a wild state. This was in Banat in western Rumania; in 1841 it was found on the mountains of Bulgaria. It was one of the earliest flowering shrubs brought to this country but, here again, when and by whom it has been impossible to discover. Evidently its beauty and fragrance impressed itself on early observers who exerted themselves to cultivate it for their own delectation.

Syringa oblata, of which there are three varieties (*affinis*, *Giraldii*, *dilatata*), is the first Lilac to open its blossoms. The plant to which the name *S. oblata* belongs was first found in gardens of northern China and was introduced into cultivation by Robert Fortune in 1856. This Lilac is characterized by its compact dome-shaped truss of lilac-purple blossoms which usually get injured by late frosts. The variety *affinis* has white flowers and is also commonly cultivated in Chinese gardens. The variety *Giraldii* is a wilding with lilac-colored blossoms borne in loose open clusters. The variety *dilatata* is native of Korea and is perhaps the most pleasing form of the species. It is of graceful habit with slender branchlets and bears in abundance lax paricles of lilac-pink, long-tubed blossoms. *S. oblata* in all its forms is remarkable for the large size of its broad leathery leaves, which in the autumn assume rich tints of vinous-purple. Crossed with the Common Lilac (*S. vulgaris*) it has given rise to a race known as *S. hyacinthiflora*, of which there are a number of named forms. They are all of vigorous growth, tall in stature and open their fragrant blossoms before those of the Common Lilac. The typical *S. hyacinthiflora* may be seen in the middle of the Lilac group and half a dozen or so named varieties of this hybrid race are growing above the Forsythias.

Syringa pubescens has the most pleasantly fragrant blossoms of any Lilac and the large bush on the left of the walk near the center of the collection fills the air for some distance. This is also a native of northern China and was first raised in the Arboretum from seeds received from Peking in 1882. It is a free-growing, free-flowering shrub with erect, rather slender stems, small leaves and large clusters of pale lilac,



The Rouen Lilac (*Syringa chinensis*)

long-tubed but rather small flowers. No Lilac is more floriferous and none more deserving of a place in gardens.

Syringa pinnatifolia is an oddity. It has small Ash-like leaves and lateral pyramidate clusters of tiny white flowers. It blossoms about the same time as *S. oblata* and on account of its un-lilac-like appearance attracts much attention. In itself it has no special garden value but to the hybridist on account of its distinct pinnate foliage it may be of value. It is native of the high mountains of the principality of Mupin, in western China, where it was discovered in 1904 by E. H. Wilson, who introduced it into cultivation.

Syringa Meyeri is a slender stemmed shrub of compact habit, and one of the first of the Lilaes to bloom. The flowers are more or less reddish lilac-colored and are borne in upright lateral and terminal clusters, forming large panicles. It is known only as a cultivated plant in gardens of northern China. A peculiarity of this Lilac is that in early autumn it bears a more or less abundant second crop of blossoms.

Syringa persica, the so-called Persian Lilac, is an old favorite now not so often seen in gardens as its merit warrants. It blossoms after the rank and file of the Common Lilacs are past when its slender shoots are transformed into flowering plumes of pale rosy purple or white. It is a spreading floriferous bush of medium height with small leaves. The type has entire leaves, but there is a form in which the leaves are incised (*laciniata*) and another with white blossoms. The specific name of this Lilac is misleading, since its native home is the province of Kansu in northwestern China. When or how it reached Persia, where it has been cultivated from very early times, is quite unknown though probably it was carried by early travellers across Asia by the old trade routes which linked China with Persia and the valley of the Euphrates.

Syringa chinensis or *S. rothomagensis* as it is often called, the Rouen Lilac, is the oldest of all hybrid Lilacs and in the opinion of many good judges the most outstanding member of the tribe. It is a cross between *S. vulgaris* and *S. persica*, which appeared as a natural hybrid about 1777 in the Botanic Garden at Rouen. Its sudden and mysterious origin gave rise to all sorts of false stories, not least being that it came from China, which egregious error gave rise to its specific misnomer. It is a long-lived bush and attains a large size, specimens 20 feet tall and 30 feet through being known. No Lilac flowers more abundantly, and old specimens in bloom resemble a tumbling mass of blossom. As in other Lilaes, so in this, the flowers vary from nearly white to reddish purple. Its constitution is as sound as that of the Common Lilac itself and much greater than that of a number of species and a host of the so-called French hybrids. The influence of the Common Lilac is shown by the vigorous habit but the narrower leaves, slender branches and abundant flower clusters are inherited from *S. persica*.

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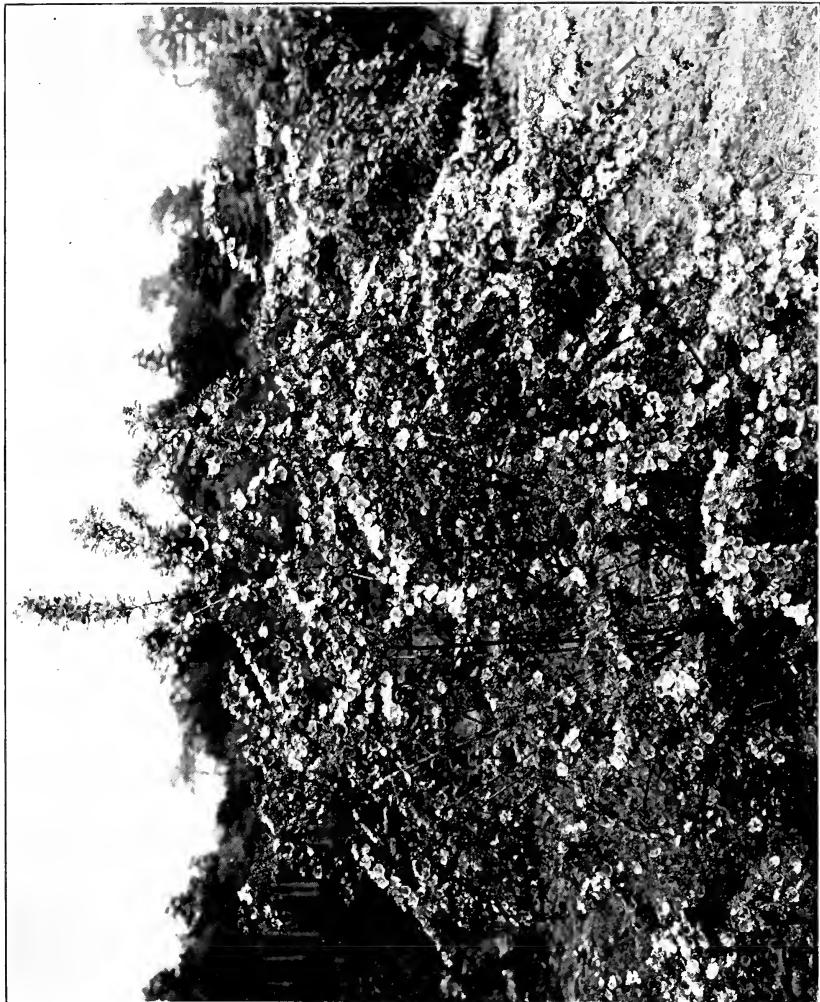
NO. 7

The American Crabapples at the foot of Peters Hill are now in full blossom, filling the air with the pleasant fragrance of violets. The favorite Bechtel's Crabapple will be at the height of its beauty when this Bulletin reaches its readers. The Common Lilac and its hundred and one forms are still in good condition, and a number of species are also in bloom. Facing the Lilaacs, the Bush Honeysuckles are covered with their pink, white and cream-colored flowers and in the Shrub Garden many others may be seen. On the left, entering from South Street Gate, a large bed of *Rhododendron carolinianum* is in full flower. On Bussey Hill Azaleas in variety are a mass of color and many of the Brooms, such as *Cytisus purgans*, *C. Beanii*, *C. purpureus* and *C. elongatus*, are tumbling masses of bloom. The Horse-chestnuts and Buckeyes on the right of Meadow Road, beyond the Linden group, are in blossom, and near the Administration Building the first of the American Magnolias are in flower. Indeed, there is blossom aplenty wherever one walks in the Arboretum.

Magnolia cordata is now beautifully in bloom on the right entering by the Jamaica Plain Gate. The trees, which were planted in 1890, are from 25 to 30 feet tall with broad, more or less bell-shaped crowns made up of a great many moderately sized branches. The flowers, which appear with the unfolding leaves, are a rich clear yellow, a color not found in any other species of Magnolia. They are cup-shaped, about $2\frac{1}{2}$ to 3 inches high and about as much broad and are abundantly produced, while in wet seasons the trees usually bear a second crop of blossoms in July. The leaves when fully grown are broadly ovate, 3 to 5 inches long, $2\frac{1}{2}$ to $3\frac{1}{2}$ inches broad, abruptly short-pointed, but the base is very rarely heart-shaped, so its name is really a misnomer. The history of this Magnolia is unusually interesting. It was discovered by the elder Michaux in the neighborhood of Augusta, Georgia, sometime between 1787 and 1796 and by him or his son introduced into France. In 1801 it is said to have been introduced into England by John Fraser. All the trees now in cultivation are derived from these original introductions. For more than a century all attempts to rediscover this Magnolia in a wild state failed, when

in April, 1910, Mr. Louis A. Berckmans accidentally found it in a dry wood some eighteen miles south of Augusta. These were bushes some 4 to 6 feet tall but since then trees of considerable size have been discovered bearing out Michaux's original description of it as a tree from 40 to 50 feet tall. This Magnolia is still rare in cultivation and appears to be one of those American trees which flourish less favorably in Europe than on its native heath. Some British writers complain of its exceptionally slow growth. From its behavior in the Arboretum this Magnolia seems well adapted to the climate of Massachusetts, where it should be more extensively grown. It is free flowering and its vivid yellow blossoms are very conspicuous. The best means of propagation is by grafting on understocks of the closely related *M. acuminata*.

Early Flowering Roses. Each year the first Rose to open its blossoms in the Arboretum is *R. omeiensis*, which is quickly followed by *R. Ecae*, on the heels of which comes *R. Hugonis*. Often the last two open at one and the same time but the Omei Rose is always a little in the van. This is a stout-stemmed bush, growing from 6 to 15 feet tall, and under favorable conditions as much in diameter. Its stems are clad with large prickles, which on the young canes are translucent and a brilliant crimson. In the variety *pteracantha* the prickles are from 1 to 2 inches long, crowd the stems, and on account of their rich color are singularly beautiful. The leaves are narrow, many-foliate, and rather suggestive of a Fern. The flowers are pure white and each has four petals arranged in the form of a Maltese cross, a peculiarity known in the Rose tribe only in this and one other related species, the Himalayan *R. sericea*. The blossoms of *R. omeiensis* are fugitive but freely produced and while they last transform the shoots into sprays of the purest white. The fruit, which ripens early in July, is rich scarlet and peculiar in that the fruit stalk becomes fleshy, orange and scarlet in color, and falls with the fruit immediately it is ripe. This Rose is a very common species on the mountains of central and western China, being partial to moorland thickets and margins of woods. It was introduced into cultivation by E. H. Wilson in 1904 and in the Arboretum has proved perfectly hardy and ornamental, not merely in flower and fruit but in foliage and in the character of its prickles. *Rosa Ecae* forms a shapely bush some 6 to 7 feet tall and 8 to 10 feet through with sturdy erect stems abundantly clad with narrow dark green, many-foliate leaves which are gland-dotted on the under surface and give off the odor of Sweetbriar. The flowers, pale yellow fading to cream color, are each about 1 inch in diameter, solitary, but crowd the upright arching stems. As a flowering bush, this Rose is less attractive than others but its early blooming qualities, its fine foliage and good habit make it a well worthwhile plant. The third species, *R. Hugonis*, is now so well known that it hardly needs description. Its habit for a wild Rose is perfect, the stems being ascending and arching over to form a fountain-like mass 5 to 8 feet tall and more through. Its pale yellow flowers, each about 2 inches across, hide the whole plant for a brief period in late May or



Padre Hugo's Rose (*Rosa Hugonis*)

early June. The fruit is dark scarlet, a character which helps to distinguish it from the black fruited *R. spinosissima* to which it is closely related. *R. Hugonis* is native of western China, where it was discovered by Fr. Hugh Scallan (Padre Hugo), a Welshman attached to the Roman Catholic Mission. Padre Hugo sent a collection of herbarium specimens to the British Museum and among them were some Rose hips. These were forwarded to the Royal Botanic Gardens, Kew, where they germinated in 1899 and plants flowered for the first time in 1905. When it blossomed this Rose was found to be an undescribed species. Objections were taken to the surname of its discoverer, so his clerical name was used instead. This Rose was received in the Arboretum from Kew in 1908, and we still have the original plant growing, although on several occasions large branches have died but so far the plant has always rehabilitated itself by sending up strong new growths. No Rose has been more abundantly disseminated in this country during the last ten or fifteen years and not one has attained, and justifiably so, greater popularity. The only pruning these three Roses require is to cut away the oldest canes after flowering. This and fertilizer to encourage vigorous new shoots is all that is necessary. They love the sunshine and should not be coddled in a warm corner. These three harbingers of the Rose tribe may be seen in bloom in the Shrub Garden on the right entering from Forest Hills Gate.

Diervilla florida venusta. The Diervillas, or Weigelas as they are commonly called, are a familiar group of flowering shrubs many of which are, unfortunately, not properly hardy in the Arboretum. There are species native of this country but the most showy members of the tribe are natives of China, Korea and Japan. They have been in cultivation for a long time and many new varieties and forms have originated both as sports and as the result of the plant breeders' skill. The whole Asiatic group is remarkably floriferous and the range of color is great, but, except in mild winters, they suffer badly. The hardest, the best, and the earliest to blossom of the Diervillas native of eastern Asia is *D. florida venusta*. This is a Korean plant, everywhere abundant on rocky mountain slopes and open country in the central and northern parts of that land. It forms a broad rounded bush, from 5 to 6 feet tall and from 6 to 10 feet through, with upright and spreading stems which in season are clad for two-thirds of their length with clustered tubular, rosy pink blossoms, each about $1\frac{1}{2}$ inches long. The color, if not as pure as one could wish, is effective in the mass and the abundant blossom and perfect hardiness of this plant gives it a unique place among the Weigelas so far as Massachusetts gardens are concerned. We owe its discovery and introduction to Mr. J. G. Jack, who visiting Korea in 1905 collected seeds and sent them to the Arboretum. The seeds germinated freely and the plants have never known injury. It flowered under cultivation for the first time in 1908 and each season since its sterling ornamental qualities have become more and more evident. It comes true from seed, though the plants exhibit a certain amount of color variation.

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NO. 8

Blossoms a plenty are now to be seen in the Arboretum. The Buck-eyes and Horsechestnuts beyond the Lindens on the right hand side of Meadow Road, entering by Jamaica Plain Gate, are now at the height of their beauty. The flowers vary from pale lemon-yellow and shades of salmon to deep rose-red, and there are, of course, the white towers of the Common Horsechestnut. Of all the Horsechestnuts none is more handsome than the rose-red blossomed *A. carnea Briotii*. Few people realize that there are Horsechestnuts other than the common sort and are surprised to learn of the range in color that the American species and their hybrids afford. The Tatarian Honeysuckles in white and pink, the flat-crowned spreading Japanese *Lonicera Morrowii* with its white, passing to yellow, blossoms are in full bloom and so, too, are some of the earliest of the Viburnums, of which the American *V. prunifolium* and *V. lentago* are outstanding members. Under the old White Pines the Enkianthus are blossoming as freely as usual and as the bushes have grown to a large size it is possible to stand beneath them and appreciate the full extent of their beauty. The colors vary from creamy white through various shades of salmon to almost crimson and in the majority they are alternately veined with lighter and darker colors. The habit of growth, especially when young, is tabuliform and the result is umbrella-like masses of blossom. Of the several species *E. campanulatus* is the best. Lovers of acid soil, good air and root drainage, they are very accommodating plants and do not mind transplanting any more than do Rhododendrons.

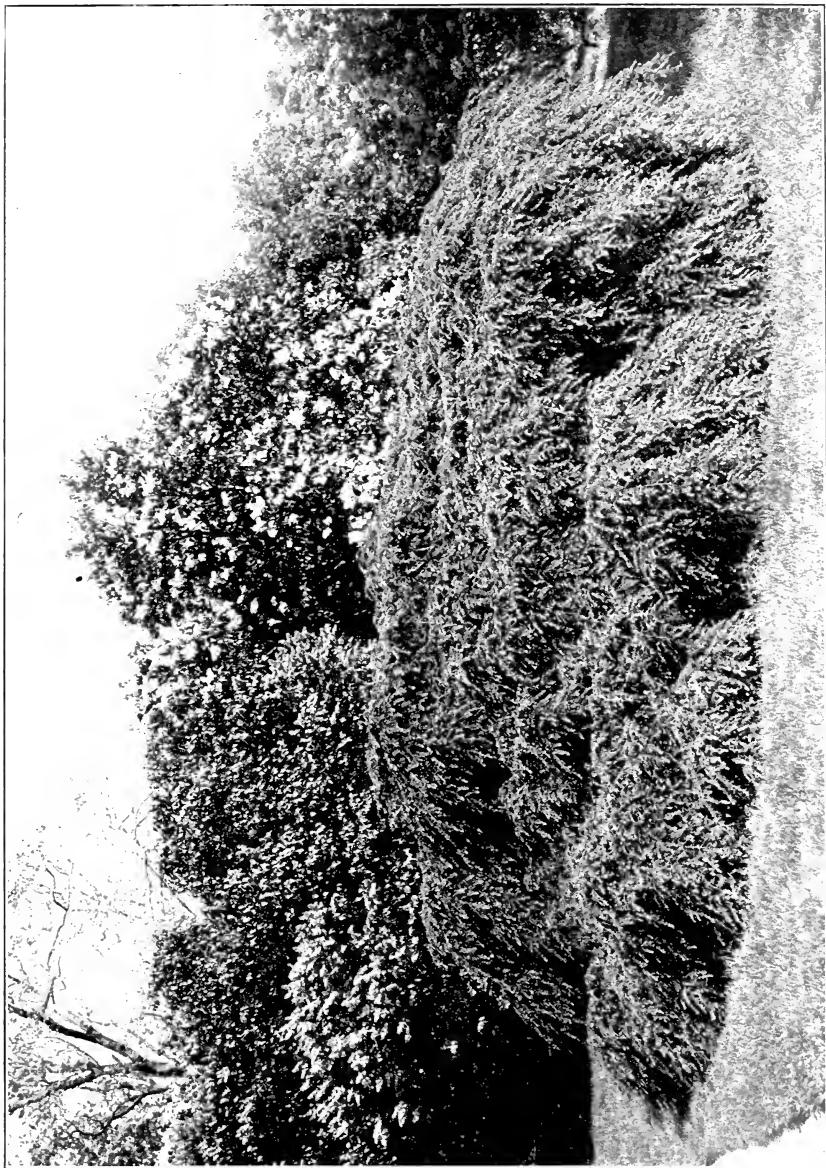
Conifers. The value of these indispensable trees is most highly appreciated during the winter season when their dark evergreen foliage forms such welcome relief in the landscape. They are beautiful at all seasons of the year but perhaps mostly so at this particular time when the young growth so brightly illuminates them. In the young leaves of Conifers every shade of green is present. The Hemlocks, some of the Spruces, and Firs are particularly bright green; on others gray- to blue-green obtains. The Pines start into growth later than Spruce, Hemlock, and Fir, but these present much beauty in the

elongated shoots from which the leaves will soon burst forth. The Junipers and Arborvitae have rid themselves of the yellowish brown mask but have not yet assumed the cheerful greens of their taller growing comrades. A walk through the Pinetum, on the left entering from Walter Street Gate, is one of the most delightful strolls that can be taken at the present time in the Arboretum. In the distance the gray-tinted unfolding leaves of the Oaks are beautiful and here and there unexpected splashes of color afforded by the Azaleas loom up like flames of fire; below and around green grass waves in the breeze completing the setting.

Sargent's Weeping Hemlock. Among dwarf Conifers none is more beautiful than the low-growing weeping form of the Common Hemlock (*Tsuga canadensis pendula*), a fine specimen of which may be seen on the right of Hemlock Hill Road, entering from Walter Street Gate and facing the Pinetum. This, like all that are seen in gardens generally, is a grafted plant and is looser and more tufted in habit than the original seedlings. Like many other dwarf Conifers, this was a chance discovery, being found on the mountains back of Fishkill Landing on the Hudson River by the late General Howland of Mattapan, New York, and named by him Sargent's Hemlock for his friend and neighbor, Henry Winthrop Sargent. General Howland found four or five of these Hemlocks, and one of his original discoveries (pictured here) is still living at Holm Lea, Brookline, Mass.

Malus angustifolia is the last of the Crabapples to open its blossoms. This is an American species native of southeastern Virginia and southward to western Florida and westward to Louisiana. Coming from warm districts, it is rather remarkable that it should be perfectly hardy in the climate of Massachusetts. It is a tree possessed of much character, resembling in habit of growth the Thorns more than the Crabapples in general. The best specimen in the Arboretum is a broad tree about 20 feet tall and 25 feet in diameter of crown. The branches are very numerous, spreading horizontally, and are armed with stout spines. The leaves are quite smooth at maturity, more or less oblong and coarsely toothed especially in the upper part. They are ruddy-tinted when young and develop as the flowers open. The rose-pink blossoms have the odor of violets, peculiar to all the American species, and are borne not so much at the ends as along the whole length of the branches so the tree forms a bouquet of blossoms garnished with young foliage. The individual flowers are open, somewhat cupped and have pink anthers. Like all the American species it is easily raised from seeds and comes true to type. Two trees in full bloom may be seen in the Crabapple collection at the foot of Peters Hill, near the famed Bechtel's Crabapple, which is still in rich blossom and thronged with myriad bees making soft music.

Rhododendron nudiflorum. Not for many years has this Azalea been so laden with plenteous blossom as at the moment and the group



Sargent's Weeping Hemlock (*Tsuga canadensis pendula*)

on Bussey Hill bank is worth coming a long distance to see. The colors vary from almost white through different shades of pink to rose-pink, and one and all are delightfully fragrant. This Azalea has long, tubular flowers with spreading lobes, the tube being a richer color than the lobes from which the stamens are long outthrust. Every twig terminates in a cluster each of from ten to twenty or more blossoms. Native of coves, woodlands, and swamps of eastern North America from Massachusetts to North Carolina and west to Tennessee, it is known as the Pinxter-bloom and though an old favorite is really not appreciated in gardens as its merits deserve. Anyone who sees the group in flower in the Arboretum will want to possess a similar treasure.

The Ghent and Mollis Azaleas, so-called, are now laden with their fragrant polychromatic blossoms. Indeed, the lower bank beyond the old White Pines on Bussey Hill is a pastel of yellow, orange, salmon and flame-color. It is much to be regretted that these gorgeous flowering shrubs are not better suited to the climate of Massachusetts. The Ghent Azaleas are of hybrid origin, being largely mixtures of the Flame Azalea of the Appalachians (*R. calendulaceum*) and other American species with the Pontic Azalea (*R. luteum*) of Europe and western Asia. The Mollis Azaleas are hybrids between the flame-colored Japanese *R. japonicum* and the yellow-flowered Chinese *R. molle*. In the Ghent Azaleas where the American blood is in the ascendancy the types are more robust and better fitted to withstand New England climate; in the Mollis Azaleas where the Japanese element is dominant the same obtains. Alongside of these Ghent and Mollis Azaleas many hundreds of small plants of the Japanese species are now coming into bloom. This is a first-class plant, although unfortunately somewhat addicted to borers. Like all Azaleas, these do best and are seen to greater advantage when massed thickly together. The colors blend well and close planting helps them to shade their roots, which is important since they are all surface-rooting.

Cotoneaster multiflora or *C. reflexa*, as it is often called, is one of the best as it is also one of the oldest in cultivation of the Cotoneasters with showy blossoms. Native of northern China, it extends westward into high Asia and growing naturally in bleak regions possesses a robust constitution sufficient to withstand the New England climate. It is a twiggy plant of dense habit, spreading, usually from 6 to 7 feet tall and twice that in diameter, but under favorable circumstances it may be ten or twelve feet high. It has thin, roundish ovate, nearly smooth, leaves which are fully grown when the flowers open. The flowers, white with the odor of Hawthorns, are borne in clusters at the ends of short lateral shoots transforming the whole branch into sprays of blossom. In the autumn relatively large crimson berries in clusters weigh down the branches. It is deciduous and its leaves turn from yellow and orange to red before they fall. At one time this Cotoneaster was more common in gardens than now, having been introduced into cultivation in 1837; it has been growing in the Arboretum since 1879.

E. H. W.

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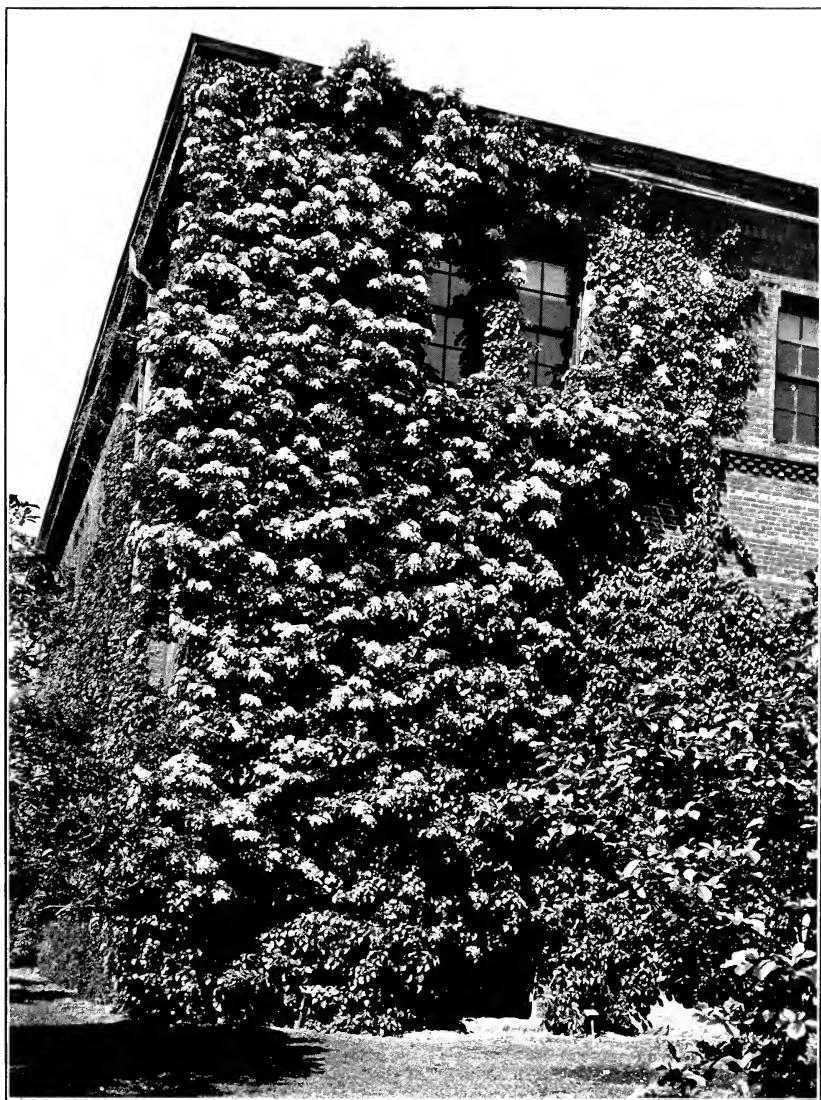
The phenomenal heat of the closing days of May was very trying on open blossoms; those on Bechtel's Crab, Kaempfer's Azalea, Vanhoutte's Spiraea, and some of the Viburnums were scorched on the bushes and are brown and unsightly. *Styrax obassia* and some other plants were forced into bloom and the flowers were over in a few hours. The Hybrid Rhododendrons at the foot of Hemlock Hill are in blossom a week earlier than is usual. On the whole these are flowering fairly well but one could wish that varieties with more pleasing colors than the rank and file of those hardy in the Arboretum could be grown. On Bussey Hill *Enkianthus subsessilis* is hung with bead-like clusters of greenish white blossoms; the typical *E. campanulatus* is past flowering but its variety *albiflorus* is laden with its ivory white flowers. The Sun Roses (*Helianthemum*) deck the ground with white, yellow and pinkish blossoms, and many kinds of *Cytisus* and *Genista* are aglow with yellow pea-like flowers. Many Viburnums in the collection on the left of Bussey Hill Road, entering by Center Street Gate, are in full bloom, and so, too, are some of the early kinds of *Philadelphus* and many Honeysuckles. In the Shrub Garden *Spiraea nipponica* and several other species are in blossom and so, too, are the Scotch Roses, Diervillas, Honeysuckles, Shrubby Cinquefoils (*Potentilla*) and many other shrubs. The Rose Acacias in the collection on the right of Meadow Road, where it curves toward Forest Hills Road, are now at the height of their beauty and well worth inspection.

Chionanthus virginica, the Fringe-tree, is a most delightful bush or small tree native of Pennsylvania and southward. It is a relative of the Lilacs and blossoms immediately after those of the Common Lilac are past. As usually seen, it is a rounded bush 10 feet tall and more in diameter but under favorable conditions it will make a small tree 30 feet high. The flowers are white, fragrant, and borne in hanging 6- to 10-inch long cymose clusters which develop singly from clustered lateral buds, the terminal bud producing a leafy shoot. The flower-stalks are slender and the inflorescence sways to and fro in the gentlest breeze. Two fine specimens hung with flowers may be seen on the upper end of the Lilac bank.

Kolkwitzia amabilis, the Beautybush, is well-named and if anyone doubts this let him view the fine specimen on the left of Bussey Hill Road above the Lilacs. The bush, six years old from seed, is planted in a position where it has room to develop and the result is a fountain-like mass about 7 feet tall and 9 feet through. The stouter branches bend gracefully over and for $1\frac{1}{2}$ to $2\frac{1}{2}$ feet of their length are laden with cymose clusters of Weigelia-like flowers. The corolla is tubular, pink suffused with white with the throat mottled with orange, and the pedicels and ovary are clad with straight white hairs which give them a cobwebby appearance. Closely related to the Weigelia and Abelia, *Kolkwitzia amabilis* is for this climate hardier, much more satisfactory and more beautiful than either. Native of the higher mountains of central China, where it is exceedingly rare, it was discovered sometime between 1890 and 1895 by Padre Giraldi and introduced into cultivation by seeds collected by E. H. Wilson in the late autumn of 1901. Wilson only met with it once in his travels in China and the flowers were unknown until it blossomed under cultivation in 1910. A canard is abroad that plants of seedling origin do not blossom. The falseness of this will be evident to anyone who sees the specimen now in bloom in the Arboretum. Moreover, all the older plants in cultivation are of seedling origin. Of course, when raised from seed one must wait three or four years until the plant produces shoots sufficiently strong to blossom, whereas when raised from cuttings one starts with flowering wood but even then has to wait several years for a shapely plant. Among the newer introductions from China there is no lovelier flowering shrub of its class than *Kolkwitzia amabilis*.

Rhododendron calendulaceum, the Flame Azalea of the Appalachian Mountains, is now in full bloom. One of the most brilliant members of the Azalea family, the fragrant flowers vary from a rich yellow in var. *croceum* through various shades of orange to deep scarlet in var. *aurantium*. The color tones grade one into another in a pleasing manner. The flowers, borne in umbellate clusters at the end of every branchlet, have a long narrow tube and five spreading lobes from which the stamens and pistil are long outthrust. It is a rather loose-habited shrub from 12 to 15 feet tall and much broader and may be grown successfully either as a specimen bush or in masses. The Flame Azalea has been much planted in many parts of the Arboretum and at the moment its flowers are seen as splashes of color here, there, and everywhere from the driveways; on the westerly slope of Bussey Hill near the old White Pine trees a large area is covered with it.

Lonicera Maackii podocarpa is one of the largest of all the Bush Honeysuckles, being a tree-like shrub 15 to 20 feet tall, flat-topped and broad in proportion. Its white, faintly tinged with pink and passing to yellow, blossoms are borne erect in clusters from the axil of every leaf on the current season's shoot. The leaves, more or less ovate-lanceolate, long-pointed, somewhat hairy, and each about $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long and 1 to $1\frac{3}{4}$ inches wide, making a delightful foil to the wealth of blossoms. The fruit ripens late and is at its best during the



The Climbing Hydrangea (*Hydrangea petiolaris*)

month of November while the foliage is retained in excellent condition until the first frosts of December put in appearance. This Honeysuckle is a common inhabitant of the thickets and margins of woods in central and western China from whence it was introduced into cultivation in 1900 by E. H. Wilson. It demands plenty of space and where this can be given ranks as one of the most all-round beautiful members of an indispensable family. It is perfectly hardy, very floriferous and free fruiting and its scarlet berries nestling among green leaves are a thing of beauty when nearly all other deciduous leaved plants have shed their foliage.

Syringa Sweginzowii, one of the latest of the true Lilacs to blossom, is now in flower. This is a vigorous shrub from 10 to 12 or more feet tall, with ascending-spreading branches, reddish purple branchlets, and comparatively small ovate leaves. The flowers are pleasantly fragrant, pinkish in the bud, almost white when fully expanded and are produced in broad, loose, erect panicles at the end of every branch and twig. The stems are moderate in size and though nearly upright the habit of the plant is not stiff; indeed, when in full blossom it is graceful and pleasing. Two large plants may be seen in full bloom on the top of the Lilac bank near the Catalpas. Along with them other Lilacs in blossom are *S. yunnarensis*, *S. tomentella*, *S. reflexa* and *S. villosa*, showing the value of these Lilac species in long extending the season after the Common Lilac and its innumerable varieties have past out of bloom.

Hydrangea petiolaris, the Climbing Hydrangea, is the most vigorous root-climbing vine hardy in the climate of Massachusetts. Its stout stems, clothed with loose shaggy papery bark, put out a multitude of fine roots that hold the vine firmly against wall or tree-trunk. From the climbing stems lateral branches are thrust forth at right angles, each of which terminates in a flattened 6- to 10-inch broad cluster of small flowers among which large white 4-partite blooms are conspicuous. The leaves are plentiful, roundish, bright green and more or less finely toothed. This plant is native of Japan, where it is common on the tops of the highest trees. Under the erroneous name of *Schizophragma hydrangeoides*, the Climbing Hydrangea has been in cultivation since 1875, but it is only within the last twenty years that its merits have begun to be properly appreciated. It is at home on tree trunks and for a southwesterly, westerly or northerly wall of a brick or stone building it is well adapted but it does not relish concrete. Also it may be grown effectively as a bush if allowed to sprawl over rocks or tree stumps. Pot-grown plants should be purchased since this Hydrangea does not transplant readily from open ground. A fine specimen may be seen on the northern wall of the Administration Building; in the Shrub Garden there is a plant growing in bush form.

E. H. W.

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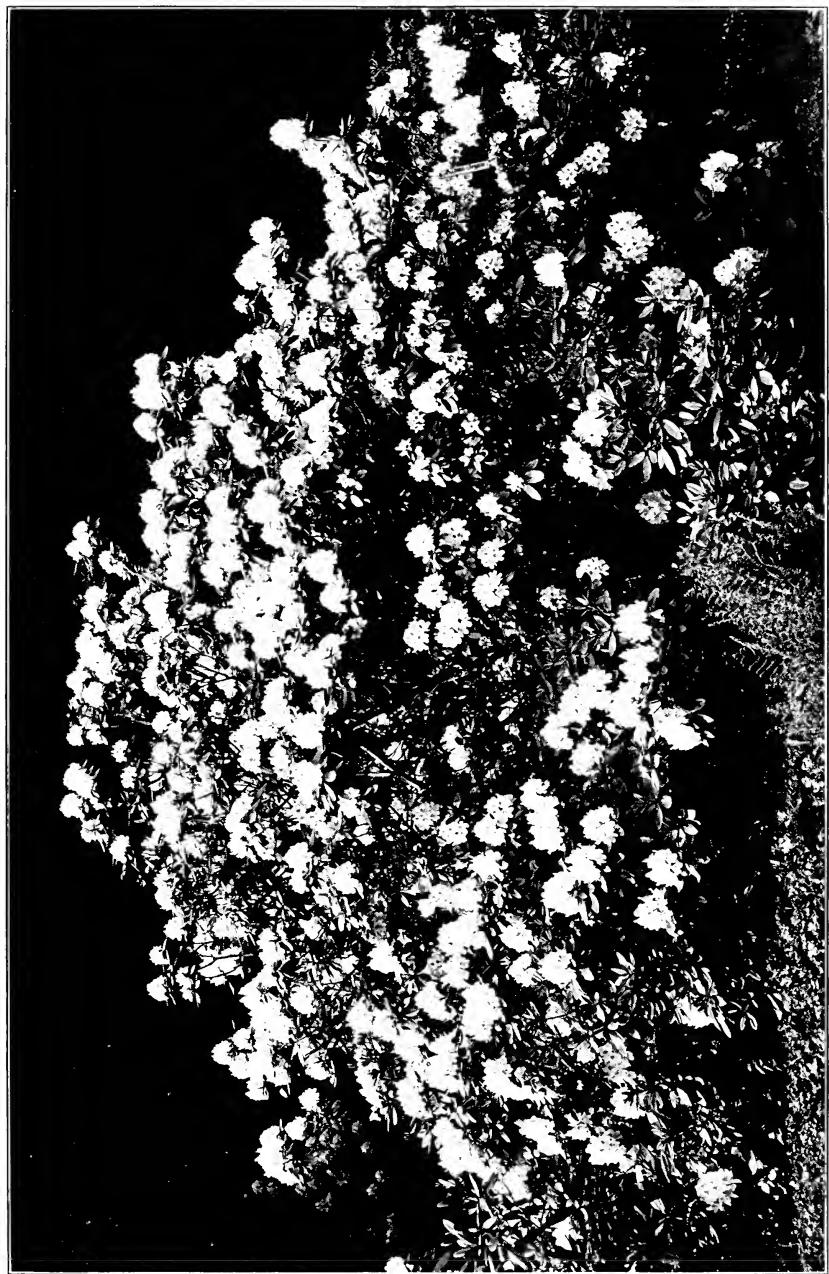
NO. 10

The South Street Gate is now the center of attraction in the Arboretum. Just within on the left the Hybrid Rhododendrons make a bold show and beyond them the Mountain Laurel (*Kalmia latifolia*) is a wealth of pink, passing to nearly white; above on the slopes of Bussey Hill to the right the Flame Azalea (*Rhododendron calendulaceum*) forms a great splash of yellow and orange, and round about the different greens of Hemlock, Beech, Oak and Yew afford welcome relief from the sun. Along the driveways *Viburnum cassinoides* and *V. dentatum* are in bloom and the Oriental *V. dilatatum* is just commencing to blossom. Of Lilacs such late-flowering species as *Syringa villosa*, *S. tomentella* and *S. Sveginzowii* are laden with flowers, and different species of Honeysuckles, Philadelphus and Robinias are making a gay display. The Mountain Laurel, although not so full as some seasons, is flowering moderately well this year. Of all the broad-leaved evergreens this is the best for New England and where it can be grown no one has cause to complain. The foliage is good at all seasons of the year and when in blossom its rounded heads of saucer-shaped flowers beautifully crimped in the bud are as pleasing as any flower can be. Like other members of its family it is a lime hater but where this is absent the Mountain Laurel is one of the most good-natured shrubs. It should be raised from seeds in the same manner as Azaleas and when properly looked after grows as rapidly as any other shrub of its class. There is a good deal of variability in the shade of color and particularly good forms are best increased by layering. In the shade of trees the flowers are more apt to be pale colored, even white, than when fully exposed to the sun but it is one of those happy-go-lucky plants that makes itself very much at home under all sorts of conditions, but as with every plant a little extra attention in the matter of position and soil pays. As a fertilizer well-rotted cowdung and oak leaves are best and this, by the way, is a good all round food for ericaceous plants in general.

Six Good Hybrid Rhododendrons which flower late are Album elegans, Catawbiense album, H. W. Sargent, Henrietta Sargent, F. L.

Ames and *Purpureum elegans*. All have a vigorous constitution and have proved perfectly hardy in the Arboretum since they were planted some twenty-five to forty years ago. The first-named is tall-growing with erect-spreading branches, rather open in habit with moderately large dark green foliage. The flowers are white faintly flushed with lavender with greenish yellow spots on the upper lobe and are borne twelve to eighteen together in a shapely dome-shaped cluster which stands well above the foliage. It is one of the oldest and most widely planted of Hybrid Rhododendrons in this part of the world and well does it deserve its popularity. *Catawbiense album* is more compact in habit than *Album elegans* and has pure white blossoms with yellowish brown dots on the upper lobe. The trusses are dome-shaped and while they are not so large as in some other sorts they are borne very freely and stand well above the foliage, making the plant as conspicuous as any other Rhododendron. H. W. Sargent has rosy red bell-shaped flowers with dark brownish black spots on the inside of the upper part of the corolla and conspicuous pale yellow anthers borne in compact rounded trusses of moderate size. Dense in habit, this forms a flattened-round bush and has dark green leathery leaves of good size. Henrietta Sargent is similar in habit of growth to H. W. Sargent but has rose-pink flowers with greenish orange markings on the upper lobe, and the flowers are somewhat smaller, more open and slightly undulate on the margin. F. L. Ames is a rather tall-growing sort with large handsome dark green foliage and a compact dome-shaped cluster of singularly pleasing flowers. They are rose-pink, flamed with white on the inside of the corolla, with greenish yellow dots on the upper lobe and the individual flower is open and spreading and overlaps one another in the truss. The color of the flower is very pure and distinct from those of any other sort growing in the Arboretum. In *Purpureum elegans* the flowers are royal-purple with greenish yellow and brown mottlings on the upper lobe. This is a dense habited bush of large size and though a very old sort is still the best of its class in so far as this climate is concerned. These six Hybrids were all raised by Anthony Waterer—*Album elegans*, H. W. Sargent and *Purpureum elegans* before 1870, the other three before 1890. On account of their extreme hardiness he classed them among his so-called iron-clads and their behavior in the Arboretum entitles them so to rank.

Taxus cuspidata, the Japanese Yew, for ornamental purposes is the most useful narrow-leaved evergreen for the climate of New England. In its different forms it is well-suited for growing as a specimen on the lawn, as a low mound or mass near the house, and as a hedge plant; moreover, of all evergreens it best withstands city conditions. Apparently it grows equally well where the soil is acid as where lime prevails, although, as a matter of fact, it is lime-loving. The typical form starts life as a wide-spreading shrub with one or more, usually several, leaders and with a little care may be trained into a tree. As a matter of fact, in a wild state in Japan and Korea it is a tree up to 50 feet and more in height and massive in trunk and limb after the manner of its European sister *T. baccata*. This type



A Good Hybrid Rhododendron, *Album elegans*

propagated from cuttings produces a vase-shaped or rounded mass but as a rule sooner or later a leading shoot develops. For the purpose of making hedges seedlings with a leading shoot should be selected and by proper clipping a hedge anywhere from 5 to 15 feet may be had in the course of time. More serviceable for small gardens and for the vicinity of the house is the variety *nana*, which varies somewhat in habit of growth but in its best form is a broad rather zigzag branching bush possessed of much individuality. How high this will grow is not known but the best plant in the Arboretum is about 7 feet tall with a spread of 20 feet. Very compact in habit is the form *densa*, which left to itself forms a low, broad flattened-round shrub 4 to 5 feet tall and treble that in diameter. It can, however, by pruning, be kept a low carpet-like mass. Similar but with the young shoots golden-yellow is the variety *aurescens*, a recent introduction from Japan, where, however, it has been long cultivated. As with Conifers, so with Yews, we admire them most during the winter months when so many of the trees and shrubs are leafless. However, one and all are most beautiful in the late spring of the year when growth commences. In the Yew the young green leaves are often tinged with yellowish bronze in a delightful contrast with the black-green of the older foliage. No matter what season of the year the Japanese Yew be examined it will be found a thing of beauty. For suburban gardens as for country estates and even for town gardens and parks it is of all evergreen shrubs the most useful and satisfactory. For many years the value of the Japanese Yew was not appreciated but nurserymen have awakened to its serviceability and it is not difficult to obtain plants although large specimens are both scarce and expensive. In time as it is more freely raised from seeds doubtless many other varieties will develop. Indeed, there is no reason why in the course of time it should not be as prolific in this respect as its European sister. Already it is part-parent of a hybrid race (*Taxus media*), of which there are a number of named forms all apparently taking after the Japanese parent in vigor and constitution.

Indigofera amblyantha Purdomii is a delightful little shrub of twiggy habit, growing 4 or 5 feet tall with ascending-spreading branches bearing in the utmost profusion erect racemose clusters of rose-pink blossoms. It is very free-flowering and the first of its tribe to bloom. This plant was discovered by William Purdom in 1910 when collecting in northern China for the Arboretum. There is a good specimen among the Chinese shrubs on Bussey Hill which has been in blossom some ten days and promises to continue for two weeks more. It is the type of shrub that can be grown among herbaceous plants and like all its tribe is fond of a sandy or gravelly soil. Near this *Indigofera* is a fine plant of *Sophora vicifolia* with Vetch-like leaves, racemose flowers each with a pure white corolla and slaty blue calyx. This is a spiny shrub none too hardy in the Arboretum but well-suited for Long Island and South.

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The virtual absence of rain for a month and the heat of the past ten days has caused the flowers on bush and vine to pass rapidly; indeed, on many they have been browned on the bushes. The Mountain Laurel at the base of Hemlock Hill still makes a good display and the Silky Cornel (*Cornus Amomum*) with its relative *C. racemosa*, better known as *C. paniculata*, are in full bloom. Here and there along the driveways spears of yellow Woadwax (*Genista tinctoria*) obtrude themselves; a few early blossoms are opening on crimson-stamened *Rhododendron arborescens* and bright splashes of color are afforded by late-flowering bushes of the Flame Azalea (*Rhododendron calendulaceum*), particularly the brilliant orange-scarlet blossomed variety *aurantiacum*. The Seashore Rose (*Rosa virginiana*) is gay with pink blossoms, nowhere more so than in the border near the junction of Meadow and Forest Hills roads. The Washington Thorn (*Crataegus phaenopyrum*, better known as *C. cordata*) is in flower, and on Bussey Hill varied-colored Sun Roses are still abloom and several mats of Thyme are aglow with purple blossoms. Certain Chinese Hydrangeas and Spiraeas are in flower and *Indigofera ambyanthia* bears a thousand rosy-purple spires. The flowers on the last of the bush Lilaes are fading, whereas those of the tree Lilaes (*Syringa japonica* and *S. pekinensis*) are at the height of their beauty. The summer-flowering Philadelphus are bouquets of fragrant white and in the Shrub Garden a miscellany of shrubs are in bloom. So far the drought has not seriously affected the Arboretum but refreshing rains are badly needed.

Ilex glabra, the Ink-berry, is one of the few broad-leaved evergreens perfectly hardy in the Arboretum. It is native of eastern North America, being found from Nova Scotia to Florida, where it grows in sandy soil mostly near the coast. The Ink-berry is a broad densely-habited shrub with twiggy branches and lustrous short-stalked ob lanceolate leaves, each about $1\frac{1}{2}$ to 2 inches long and $\frac{1}{2}$ inch broad, slightly toothed toward the apex. The leaves are leathery, lustrous green on the upper surface and pale on the lower. The plants are of

two sexes; in the male the flowers are clustered in the leaf axil, whereas in the female they are usually solitary. The ripe fruit is jet black. This shrub makes a broad billowy mass 6 to 8 feet tall and by clipping and training could be used for hedges. A clump of the Ink-berry may be seen facing the Mountain Laurel on Hemlock Hill Road.

Kalmia angustifolia, the Sheep Laurel, is a poor and maligned sister of the handsome Mountain Laurel (*K. latifolia*), found widely distributed from Newfoundland and Hudson Bay south to Georgia. It is an inhabitant of swamps and pastures and is said to be fatal to sheep if they eat the leaves. The legend is deep seated but actual proof never has been forthcoming. The Sheep Laurel is a twiggish shrub 2 to 5 feet tall and broad with oblong grayish green foliage. The leaves are arranged in threes and from the axils of each stalked fascicles of rose-purple, saucer-shaped flowers arise. The arrangement is such that the whole of the previous season's growth forms an elongated paniced mass of flowers surmounted by the young growth of the current season. Though not showy it is a useful shrub especially for the wild garden or for rough places and being evergreen it has winter value. The individual flowers though much smaller than those of the Mountain Laurel are of exactly the same form and in each crimson anthers are prominent. If the Sheep Laurel was an exotic it would be much more appreciated than it now is.

Berberis polyantha is a first-class Barberry and a shapely shrub of dome-shaped habit from 6 to 9 feet high with ascending spreading branches. The pale green leaves are obovate, each about 1 inch long, toothed on the margin and glaucous on the underside. The flowers are clear yellow and are borne in erect-spreading or nodding panicles each from 3 to 6 inches long; the fruit is oblong-ovoid and salmon-red. This Barberry is very floriferous, and with its clear yellow flowers and the manner in which they are borne, highly ornamental as a specimen on Bussey Hill proves. It is native of the Chino-Thibetan borderland and was introduced into cultivation by seeds sent to the Arboretum in 1908 by E. H. Wilson.

Cotoneaster salicifolia floccosa is the only tall-growing evergreen Cotoneaster hardy in the Arboretum. It is a singularly attractive species with ascending-spreading, arching whip-like branches clothed with purple-brown bark. The leaves are very short-stalked, narrow-oblong-lanceolate, each from 2 to 2½ inches long and 1/3 of an inch wide; they are wrinkled and lustrous green on the upper surface and clothed with a gray felt of floccose hairs on the lower. Each lateral shoot terminates in a 2- to 3-inch-broad, flattened cluster of Hawthorn-like flowers in which rose-purple anthers are prominent; the fruit is small, scarlet, and produced in quantity. Where growing freely the habit of the shrub is fountain-like and in foliage, flower, and fruit it is highly ornamental. A nice plant now in blossom may be seen in the Cotoneaster collection on Bussey Hill.



A Handsome Oriental Viburnum (*V. dilatatum*)

Liriodendron Tulipifera, the Tulip-tree, is one of the noblest and tallest of American deciduous-leaved trees. In the rich bottom lands of Ohio and on the lower slopes of the high mountains of North Carolina and Tennessee, it grows to a height of 180 feet with a trunk as much as 30 feet in girth, straight and often free of branches for from 30 to 60 feet above the ground and clothed with gray deeply ridged bark. The branches spread more or less horizontally, and the branchlets are somewhat decurved, the whole forming a shapely, somewhat bell-shaped, crown. The leaves are long-stalked, bright green, more or less saddle-shaped with four prolonged lobes and truncate at the apex. The flowers, which so many people pass unnoticed, are really very beautiful, being singularly like a Tulip in shape, hence the common name. They are terminal with three greenish deflexed outer and six greenish yellow inner segments each with a heavy blotch of rich orange toward the base. The apex of the segments is recurved and the prominent stamens stand erect in a circle around the cone-shaped pistil. The flowers are each about $1\frac{1}{2}$ to 2 inches long and the same in width, and though they stand above the foliage they are somewhat hidden. In leaf and flower the Tulip-tree is entirely different from other American trees. The wood is white, close-grained, light and soft and is known in the trade as Whitewood or Yellow Poplar. For ornamental purposes the Tulip-tree is too much neglected. It seeds freely and these germinate readily and with a little care the plants are not difficult to transplant. Boston is a little north of its natural range but some fine planted specimens may be seen here and there. It should be used more abundantly on private estates; for forming a grove in cemeteries or in village squares there is no finer tree. Not only is the Tulip-tree one of the noblest of North American trees but one of the most interesting of existing types. It belongs to an old geological period and has but one other representative in the world. This is a Chinese species (*L. chinense*), smaller in all its parts than the American tree and confined to the east-central provinces. Although introduced into cultivation in 1900 by E. H. Wilson, this tree has not proved hardy in the Arboretum but visitors to Kew and other large gardens in the British Isles can see the Chinese Tulip-tree flourishing. Those who garden on Long Island and south could grow it also.

Viburnum dilatatum is a wide-spread Oriental species being common in many parts of China, Korea and Japan. It is a hardy, shapely bush, growing from 6 to 8 feet tall and is broader than high. The leaves are of good size, dull green and coarsely toothed, roughly hairy and more or less obovate in shape. The flowers are small, white, borne many together in flattened 5- to 6-inch broad clusters which terminate every shoot. The odor is not pleasant but the flowers appear to be much sought after by bees. The fruit is small, ovoid, brilliant red and remains in good condition on the bushes far into the winter. Possessed of all round good qualities, this Oriental Viburnum deserves to be widely planted especially in the colder parts of this country. It has been growing in the Arboretum since 1888 and has never known winter injury.

E. H. W.

ARNOLD ARBORETUM

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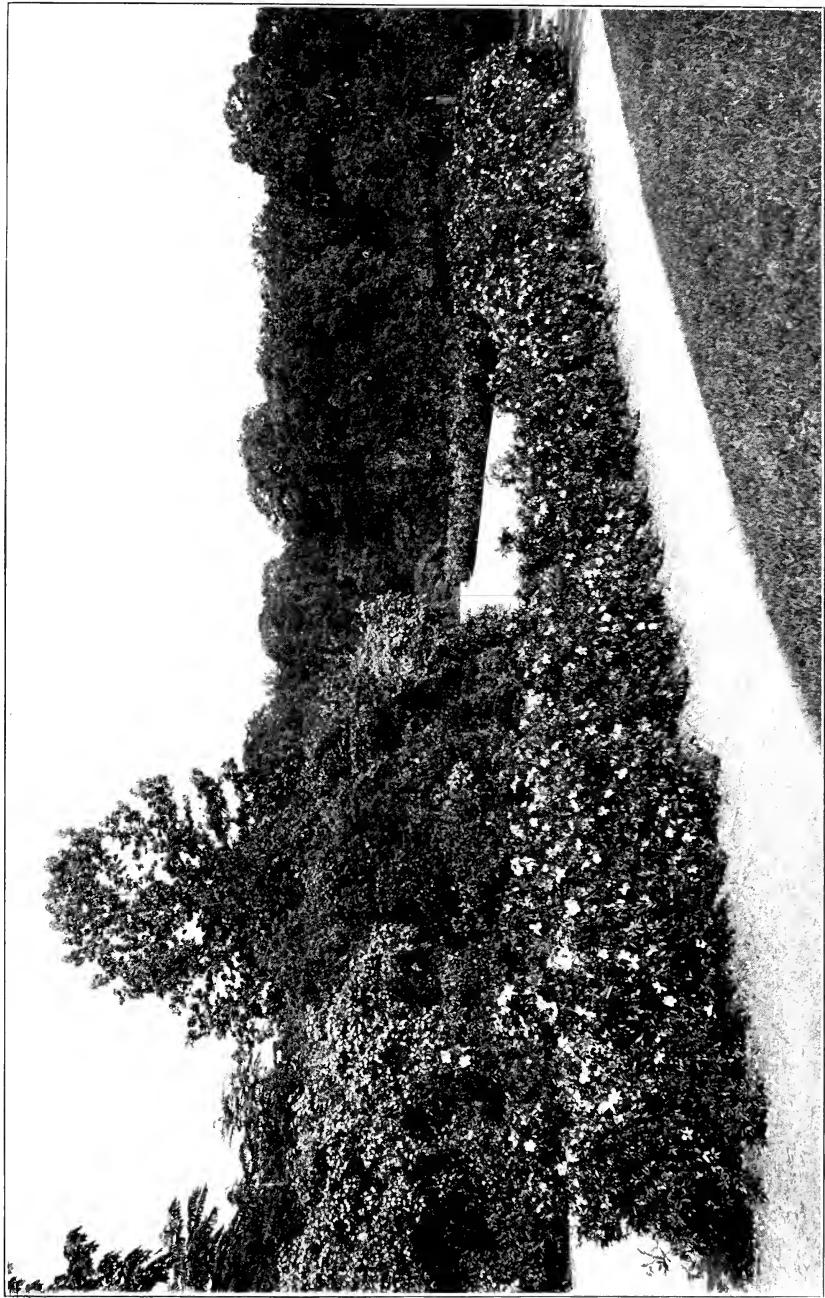
The drought, which threatened to become serious, was broken by a heavy thunderstorm on the morning of Saturday, June 22, but more rain is needed. On the whole, this has been a rather erratic season; flowers have opened out of order and have not lasted so long as usual. The Mountain Laurel is passing, the Catalpas are in full bloom and so, too, are *Viburnum pubescens* and the Canadian Elder (*Sambucus canadensis*), sure signs that high summer is here. The fruit is ripe on the Tatarian and other early Honeysuckles, on the Mulberries, and on the Shadblows, and the bushes are alive with starlings and other fruit-eating birds, gorging themselves on luscious berries. In the Shrub Garden a variety of shrubs are in bloom, noticeable among them being different members of the Pea family, such as *Indigofera*, *Colutea*, *Amorpha*, and *Cytisus*, many Rose species and a number of *Rugosa* Hybrids, together with *Hydrangeas*, *Philadelphia*, *Spiraea*s and *Privets*. The border planting of *Rosa virginiana* alongside Meadow Road is a pleasing spectacle, especially in the early morning and evening when thousands of large rose-pink blossoms are expanded. This common Rose of New England, abundant in pastures, rocky places and along the seashore, is really one of the most delightful of native plants and for border planting one of the finest we possess. It gives but little trouble, the only pruning necessary being the cutting away of the oldest canes each spring. The foliage is good, the flowers large, the fruit bright scarlet, and in the winter the crimson stems give welcome color to gray landscapes. The Rose spreads itself readily by underground stems and is, all in all, most accommodating and useful.

In a border on Bussey Hill the *Cytisus* and their relatives have made a gay display since about the middle of May and in the last week of June a number are still in blossom, while some of the later sorts have yet to expand their flowers. At the moment *Dorycnium hirsutum* is crowded with umbellate heads of blooms, the white corolla being neatly set off by a purple-brown calyx. This is a suffruticose plant with hairy stems and gray foliage, which forms a low mound from 8

to 12 inches high and a yard in diameter. Similar in habit and with clustered heads of creamy white flowers is *Cytisus albus*, while *C. supinus* is taller growing with terminal clusters of rich yellow blossoms. All three are native of southern and southeastern Europe and are well adapted for rockeries and for growing in sandy, gravelly places. The handsomest of its tribe just now is *C. nigricans* with erect, foot-tall spires of clear yellow blossoms. This is a plant of shapely habit, forming rounded masses a yard high and twice that in diameter, with dull green foliage and twiggy stems, every one of which terminates in a long raceme of flowers. It is one of the hardiest and has been cultivated since 1906 in the Arboretum, where it has never failed each summer season to put forth a wealth of blossoms. The Woadwax (*Genista tinctoria*) is a naturalized roadside weed in many parts of Massachusetts and one held in abhorrence by dairymen since much good pasture has been partially ruined by its presence. On this account one would hesitate to plant it in gardens but there is a low growing double-flowered form (*plena*) which certainly ought to be recognized as a useful rock plant. The racemes are more compact than in the type, a richer yellow, if anything, and the habit is spreading with ascending stems. Since its flowers are double the plant produces no seeds, so there is no danger of it spreading and becoming a nuisance. Another charming low-growing plant is *G. sagittalis*, with terminal compact racemose heads of deep yellow blossoms. The stems are jointed and flattened and carry out the common functions of leaves but often from the joint a gray-green ovate-lanceolate leaf appears.

Not least of the blessings which garden lovers owe to that great French family of hybridists, the Lemoines, are the hybrid *Philadelphus* of which they have created scores of remarkable fine plants. In one group, of which the well-known *P. Lemoinei* is typical, the branches are twiggy and arching and form when in blossom a dense fountain of fragrant white. In another, of which Virginal is an example, the habit is more upright, the stems stout and the flowers very large and somewhat double. In yet another type, exemplified by Belle Etoile, the base of the flower is flushed with rose-purple. Part-parent of this group is *P. Coulteri*, native of northern Mexico, a tender plant, an unfortunate weakness which it has conveyed to its progeny. Any and all of the Lemoine *Philadelphus* are worthy of a place in gardens. They are not particular as to soil, but thrive best in good loam and a well-drained situation where they can enjoy plenty of sunshine. So soon as they have blossomed the older stems should be cut away so that air and light may penetrate into the center of the bushes and induce a vigorous growth for the next season's blossoms.

Itea virginiana is an old-fashioned summer-flowering shrub not so well-known in gardens as it deserves to be. It is native of the eastern United States, being found from New Jersey to Florida and blooms at the end of June when the majority of shrubs are past. It forms a bush from 5 to 8 feet tall with slender, erect stems, oblong-lanceolate, pointed leaves, each about 3 to 5 inches long and 1 inch in diameter,



A Border Planting of The Seashore Rose (*Rosa virginiana*)

with fragrant, white, star-like flowers crowded together in terminal cylindrical, tail-like racemes, every lateral shoot ending in a cluster of blossoms. The plant spreads by underground stems and is easily increased by division. *Itea* is an interesting genus represented by one species in eastern North America and several in eastern Asia. The only really hardy member of the genus is the Virginian plant.

Hypericum Buckleyi of the southern Appalachian Mountains is a low-spreading plant with slender stems only a few inches high, each of which terminate in a cluster of about 3 golden-anthered, rich yellow flowers about 1 inch broad. It is a charming little rock plant which has proved hardy in the Arboretum since 1889.

Clematis recta is a good plant for growing on a trellis, among boulders, or in the herbaceous border. Of suffruticose habit, it is killed to the ground each winter in the Arboretum, but in the spring thrusts up stems after the manner of herbaceous perennials and by the end of June forms a tangled mass 6 feet tall. The foliage is dull green and the flowers pure white, star-shaped, each about 1 inch in diameter, and borne hundreds together in panicled masses. It lacks the pleasant fragrance of the well-known September-flowering *C. paniculata*, which otherwise it much resembles. This plant is widespread throughout northern Asia and is represented in Manchuria and Korea by a slightly different form known as var. *mandschurica*.

Tilia tomentosa, the Silver Linden, is one of the finest trees for park or lawn and unlike many other European trees it is perfectly happy in the climate of New England. In youth and middle age it has ascending spreading branches forming a broad pyramidal crown, but at maturity the branches spread more horizontally and form a bell-shaped head. The leaves are broad, roundish ovate, pointed, oblique and deeply cordate at the base, coarsely toothed, dark green on the upperside and silvery gray on the underside. With the faintest breeze stirring the leaves the gray undersides form a delightful contrast. Similar in foliage but of weeping habit is the Pendent Silver Linden (*T. petiolaris*), of which there is no finer lawn tree. Where it is happy, this grows from 75 to 80 feet tall with a trunk 12 feet in girth and a handsome dome-shaped crown, the branches sweeping the ground. Both these Lindens are considered to be native of southern Europe and western Asia and have long been cultivated for their ornamental qualities. Fine specimens may be seen here and there in the older settled parts of this country, the Silver Linden being one of the first trees brought over by early settlers.

E. H. W.

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HARVARD UNIVERSITY

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NO. 13

Copious rains have fallen since the last Bulletin was written and vegetation has revived. Where last week flagging foliage presented ominous signs of distress, freshness and vigor prevail today. There is not much bloom to be seen at the moment in the Arboretum but in the healthy growth on tree and shrub and varying greens of the foliage much beauty is present. Beneath the Hemlock Grove the Rosebay (*Rhododendron maximum*) is in full flower and in many places the Swamp Honeysuckle (*Rhododendron viscosum*), last of the Azaleas to blossom, is covered with pure white pleasantly fragrant flowers. This inhabitant of swamps from Maine to South Carolina brings to a close the Azalea season, which this year commenced the first week in April. The Swamp Honeysuckle and its relative, *R. aborescens*, which has larger flowers with crimson style and stamens, will be in blossom for the next two weeks, so by planting a variety of Azaleas a succession of bloom lasting three and a half months may be had. The two Azaleas named are freely placed along the drive-ways and are massed together on the westerly slope of Bussey Hill. The late-flowering *Berberis aggregata* with erect clusters of crowded, clear yellow flowers is coming into blossom and so, too, is its variety *Prattii*, characterized by a much larger inflorescence. This Barberry is about the latest to bloom and being very hardy is worthy of the attention of those who live in their summer homes from June until September. Several fine bushes of this Barberry laden with blossoms may be seen among the Chinese shrubs on Bussey Hill. Nearby a number of the Brooms are still in blossom, including the lovely *Cytisus nigricans*, which is a balloon-shaped mass decked with a thousand clear yellow spires, each from 6 to 10 inches long. A few of the later flowering *Philadelphus* are still in blossom, including the handsome Virginal. On the Lilac bank *Elaeagnus multiflora* is laden with ovoid orange-red fruits, each suspended on an inch long stalk. This is a shrub of good habit which is particularly ornamental at this season. Near Forest Hills Gate the Prairie Rose (*Rosa setigera*) is opening its blossoms, marking the close of the Rose species' season. In the Shrub Garden several kinds of Hydrangea are commencing to flower,

Indigofera Kirilowii bears a multitude of pink blossoms in erect axillary racemes, and close by it the white-flowered *I. decora alba* is in full bloom. The Bladder-sennas (*Colutea cilicica* and *C. arborescens*) carry in quantity yellow pea-shaped blossoms toward the ends of the current season's shoots and below them purplish brown bladder-like pods, which are even more ornamental than the flowers. At the Jamaica Plain Gate, the white cup-shaped flowers of the Sweetbay (*Magnolia virginiana*, more widely known as *M. glauca*) fill the air with a pleasant spicy odor and beyond in the collection of Lindens on the right of Meadow Road, entering by the Jamaica Plain Gate, *Tilia vulgaris* and its several varieties are in full bloom. This shapely tree is the earliest of the Lindens to blossom and at the moment its honey-scented flowers are the delight of a myriad bees.

Thymus Serpyllum coccineus is a charming little ground-cover and rock plant, growing only a couple of inches high and bearing a multitude of crimson-purple blossoms in terminal clusters. The leaves are deep green and when crushed give off the pleasing and familiar odor of Mother-of-Thyme. The plant is apparently a special favorite of bees who are busy from morn till night sucking nectar from the flowers. This Thyme, like all its relatives, is fond of a sunny situation, a sloping bank for preference, where it can enjoy good root drainage throughout the winter. While it is an excellent ground-cover it is seen to greater advantage when capping a boulder in the rockery. Similar in habit to this Thyme but distinguished by its gray, woolly leaves, is the variety *lanuginosus*, which, however, has less brilliant colored flowers. There are quite a number of varieties of *T. Serpyllum*, all of which have a place where rock gardens are in favor and where ground-covering plants are desired.

Ceanothus pallidus roseus of hybrid origin is a very useful mid-summer flowering shrub. It forms a low, round-topped mass about 3 feet high and 6 to 10 feet broad, being made up of a wealth of slender purple-brown stems all well furnished with dark green, oblong-lanceolate leaves, each about 2 inches long and $\frac{3}{4}$ of an inch broad and crenate along the margin. Every stem terminates in a globose mass of small pinkish blossoms and as similar clusters arise from the axils of the uppermost leaves the whole inflorescence is a panicle mass. Since this shrub flowers on the current season's shoot it should be pruned severely in the early spring. Its part-parent, *C. ovatus*, is long since out of blossom but another eastern American species, *C. americanus*, is just beginning to show signs of bloom. These Tea-bushes, as they are locally known, are quite useful plants but they cannot boast the beauty of their Californian sisters, which, with their rich blue and other colored blossoms and the hybrids that have been derived from them, rank among the loveliest of shrubs. Alas! not one is hardy in New England.

The Vines on the walls and on the trellises in the Shrub Garden are now in luxuriant growth and well worth the attention of those requiring strong growing climbers for similar purposes or for clothing per-



Fragrant White-blossomed *Rhododendron arboreum*

golas. When planted, as they are in the Arboretum, at the foot of boundary walls topped by a wire fence vines have ample room to grow and display to best advantage their luxuriance. In the genus *Vitis* and its relatives, *Ampelopsis* and *Parthenocissus*, there is great variety in form, shape and size of leaf; they vary also a good deal in shades of green and in the autumn the majority assume brilliant tints. The strong and tall growing vines, chiefly *Vitis* and *Smilax*, give quite a tropical aspect to the thickets and margins of woods in New England and are admired by all visitors from Europe. This rampant, luxuriant, scendent vegetation is the outstanding feature of New England's countryside as opposed to that of Europe.

Liquidambar styraciflua, the Sweet Gum, is an exceedingly handsome American tree, native of rich bottom lands and borders of swamps from southern Connecticut south to Florida and westward through Arkansas to the valley of the Trinity River in Texas and reappearing on the mountains of central Mexico and south to the highlands of Guatemala. It attains under favorable conditions a height of from 100 to 140 feet and has a trunk 12 to 15 feet in girth. The dark gray bark is deeply ridged and corrugated and the ascending-spreading and spreading branches form an umbrageous crown which is pyramidal in young trees. The lustrous green leaves, hanging on long relatively slender petioles, are Maple-like, being palmately 5-lobed with each lobe long-pointed. In the autumn they assume brilliant tones of scarlet and crimson. The insignificant flowers are borne in a globose head after the manner of those of the Button-tree and the fruit hangs suspended from a long stalk. In the autumn the fruits open and forcibly eject jet black seeds, as do those of the Witch-Hazel to which the Sweet Gum is closely related. One does not see in New England this tree so frequently planted as its merits deserve. Boston is a little north of the natural range of this tree and in consequence when young it is often somewhat tender but after a few years it gets acclimatized and then grows vigorously. In Llewelyn Park, New Jersey, there is a very interesting grove of Sweet Gum, the result of spontaneous seeding from a number of handsome old parent trees. In the late autumn the colored foliage of this grove is worth quite a journey to see. *Liquidambar* is an interesting genus and represents an old type of vegetation. Three species only are known: the American, already mentioned, one in southwestern Asia Minor, known as *L. orientalis*, unfortunately not hardy here, and *L. formosana*, the third species, found widespread in China, Formosa, and the Philippines. The last-named species is one of the handsomest of Asiatic trees but is not hardy here. There is, however, a mountain variety of it (*monticola*) which has survived for some twenty years in the Arboretum and now promises to make a bushy tree. The wood of the American *Liquidambar* is bright brown tinged with red with a narrow almost white sap wood and is hard, heavy, straight, and close-grained but not very strong. It is much used in western states in house furnishing, cabinet-work and box-making. That of the Chinese species is similar in color and texture and being quite odorless is used for making packing cases for the higher grade teas.

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Rhododendron maximum, the Rosebay, with compact pyramidal clusters of white, flushed with pink, blossoms makes a pleasing display at the foot of Hemlock Hill. Though much less showy than the majority of evergreen Rhododendrons, this native species is valuable for the lateness of its blooming period. On the slopes of Bussey Hill and elsewhere the Swamp Honeysuckle (*R. viscosum*) is still in blossom; on Center Street Path the rare suffruticose *Sphaeralcea remota* is bearing in profusion its pale rose-purple blossoms suggestive of a miniature Hollyhock. Above the Lilacs *Catalpa bignonioides*, the latest to flower of the two American Catalpas, is in bloom, and across the road *Maackia amurensis* is putting forth its upright spikes of whitish flowers. Alongside Meadow Road *Koelreuteria paniculata*, showiest of summer-flowering trees, is opening its brilliant yellow blossoms. This good-natured Oriental tree deserves wider recognition for it seems happy not only in the pure air of the country but in the soot and grime of the city. With the exception of Laburnum it is the only yellow blossoming tree hardy in this part of America; apart from its wealth of blooms it is worth growing for its large pinnate foliage. In the Shrub Garden summer-flowering Spiraeas in white, pink, and crimson-pink are in bloom. So, too, are several Yuccas and shrubby Potentillas, while a number of Bush Honeysuckles are burdened with ripe fruit. On the Administration Building the climbing *Schizophragma hydrangeoides* is in full flower.

Lonicera tatarica and its several forms and hybrids are now laden with ripe fruits. These old-fashioned Bush Honeysuckles are still among the most useful of the larger shrubs for parks and gardens in the colder parts of this country and Canada. Natives of northern Asia, they are accustomed to a rigorous climate and given plenty of room they will make bushes from 15 to 18 feet tall and from 25 to 30 feet in diameter with ascending and spreading branches, forming a round-topped mass. The flowers, white, yellowish, or pink, are freely produced in the early spring and now at high summer the branches are weighted down with ripe berries. In the typical *L. tatarica* the

fruit is red; in the variety *lutea*, it is orange and translucent. There are several hybrids of which *L. tatarica* is part-parent, all of them excellent shrubs but none is better than *L. bella*, which bears enormous quantities of rich crimson berries. These Bush Honeysuckles are good-natured plants but like other shrubs they respond to liberal treatment. Given a good loamy soil, a position where their roots can be plentifully supplied with water and abundant space in which to develop they will be objects of beauty decade upon decade. The only pruning necessary is from time to time to remove old and worn-out stems. They enjoy wind and sun, and winter cold never injures them.

Acanthopanax leucorrhizus is a member of a small tribe of summer-flowering trees and shrubs related to the Ivy. They are natives of the Orient and comprise about a score of species, *A. leucorrhizus* is a round-topped bush from 8 to 10 feet tall with sturdy erect stems, gray-green when young, later olive-green and furnished with deflexed prickles. The leaves, on long petioles with a sheathing base, are digitately 5-foliate, coarsely serrated and dark green on the upper surface. The flowers, each borne on a long slender but rigid stalk, are small, greenish, with prominent white anthers. The inflorescence is terminal, consisting of a number of long-stalked globose heads, the whole forming a spreading cymose cluster. The fruit is a jet black berry which remains on the branches far into the winter and it is for the fruit rather than its flowers that this shrub and most of its relatives are worth a place in gardens. A smaller growing species is *A. Giraldii*, remarkable for the wealth of bristle-like hairs that clothe the stems. In China the stems of this plant are pulverized and the powder is employed as a vermifuge, a drastic remedy which is possibly more dangerous than the disease. These with other species may be seen in blossom on Bussey Hill near the Cedars of Lebanon.

Philadelphus incanus is a Chinese species of Mockorange and the latest of its tribe to bloom. It is a vigorous shrub with ascending-spreading branches growing 10 to 12 feet tall with relatively large ovate to ovate-lanceolate leaves furnished with gray pubescence on the under surface. The sweetly scented flowers, each about 1½ inches in diameter, are produced in terminal, spreading, 6-inch long racemes. The flowers face downward and the calyx is clothed with a gray pubescence. This species is a common shrub in thickets and margins of woods throughout central and western China, where it was discovered and introduced into cultivation about 1895. Like all its tribe, it is free-flowering and since it produces its blossoms when those of its relatives are faded it is of value in prolonging the Mockorange season; in the hands of the hybridist it may prove parent of a late-flowering race.

Amorpha canescens, the Lead-plant, is in blossom in the Shrub Garden. This native of the middle west is an attractive shrub with narrow, pinnate leaves which like the stems are hoary. The flowers are borne in clustered spike-like racemes produced both terminally and from the axils of the upper leaves, the whole forming a panicu-



Crimson-fruited *Lonicera bella*

late mass. The individual flower is small, hooded, violet-purple with prominent yellow anthers. It blooms on the current season's shoot, so should be pruned in the early spring. It is sun-loving, very floriferous and unusual in appearance owing to the hoary character of stem and leaf.

Ulmus pumila. Under such names as Siberian Elm, Asiatic Elm, and Peking Elm the Arboretum has this year received for identification specimens from many parts of the country. In every instance the material was referable to *U. pumila*. This Elm is a common tree in Korea, parts of Manchuria and in northeastern China, where it grows usually on the open plains and by the sides of rivers and stony mountain torrents. Although it was named *U. pumila* by Linnaeus it is anything but a dwarf tree. In its native land it is at maturity often 80 feet tall with a trunk 11 feet in girth clothed with dark gray, deeply corrugated bark, and a crown made up of a few wide-spreading massive branches. In youth and middle age it is an entirely different looking tree, being pyramidal in outline with a compact head of twiggy branches. The leaves on both young and old trees are ovate-lance-shaped, long-pointed, smooth on both surfaces, each from $\frac{1}{2}$ to $2\frac{1}{2}$ inches long and from $\frac{1}{2}$ to $1\frac{1}{4}$ inches broad, and coarsely toothed along the margin. It flowers in early spring and the fruit is ripe early in May. This Elm has been in cultivation since about 1860 in Europe, where it does not appear to have impressed tree lovers in outstanding manner. Its first appearance in this country seems to have been as small plants sent from Peking to the Arboretum in 1905 by J. G. Jack. These have disappeared from the collection but growing there, on the left of Bussey Hill Road beyond the Lilacs, is a tree fully 35 feet tall raised from seeds collected in Peking on May 4, 1910, by E. H. Wilson. The general introduction of this Elm we owe to F. N. Meyer, collecting for the Bureau of Plant Industry. Department of Agriculture, Washington, D. C., who sent in 1913 abundant seeds which germinated freely and the plants were subsequently widely distributed. They proved to be rapid growing and of much value in the prairie states and on the Pacific coast. In the Arboretum this Elm has grown faster than any other tree and so far appears free from disease and does not harbor insect pests. It gives every promise of being exceedingly useful for cities, since apparently it does not mind smoke-laden atmosphere so much as many other trees. Except that it does not grow old gracefully, no fault concerning this tree is known. In Manchuria and Korea it is commonly used as a hedge plant about the railway stations, being clipped in the usual manner. There is no reason why it should not serve a similar purpose in the prairie states of this country. Another species of Elm is by some confused with this tree, namely *U. parvifolia*, also native of the Far East. No two Elms could be more distinct. *U. parvifolia* is a small tree with thin scaling bark, a round-topped twiggy crown, small, more or less oval, thick and leathery leaves and it blossoms in the autumn. This is a neat little tree for the lawn but is slow-growing and worthless as a street tree.

E. H. W.

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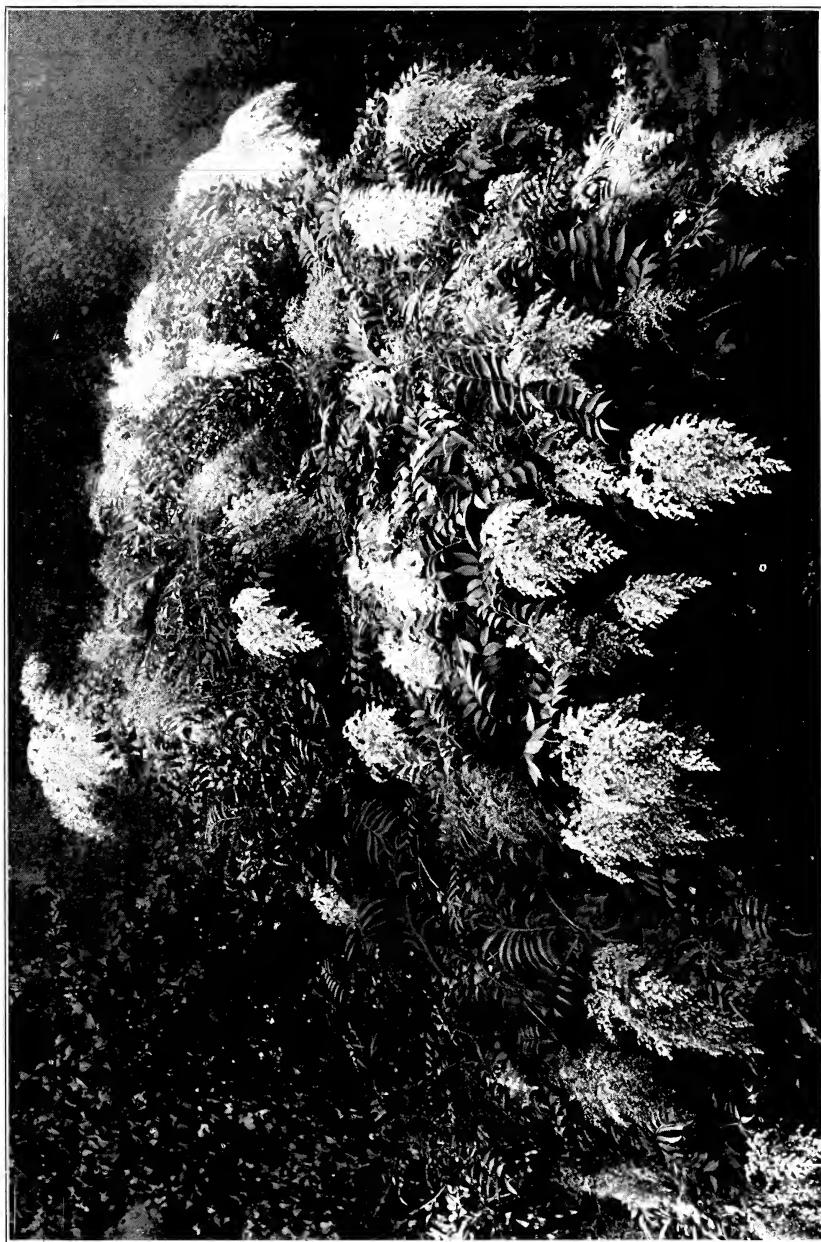
NO. 15

The scarcity of rain is affecting vegetation generally; the foliage on some of the shrubs is wilting, the trees however, show little or no ill effects, but copious rains are badly needed. The season has been very erratic; flowers have opened out of order and under the hot sun have lasted for a shorter period than usual. Most of the shrubs and trees have made a good growth and the Conifers and Yews in particular are looking remarkably well. Some of the Silver Firs, such as *Abies concolor* and *A. homolepis*, are bearing a heavy crop of cones, all perched erect on the uppermost parts of the trees. Among the Kalmias under the lee of Hemlock Hill the Sorrel-tree (*Oxydendron arboreum*) is rapidly expanding its spreading panicled masses of white flowers. The foliage of this floriferous tree is light green and in the autumn assumes rich crimson tints. Trees and shrubs that bloom at this season of the year have unusual value and the Sorrel-tree ought to be much more freely planted, it is perfectly hardy and thrives where an acid or neutral soil prevails. The Fleece Vine (*Polygonum Aubertii*) is opening its white blossoms and displaying its value for pergola and trellis. This and its relative, *P. baldschuanicum*, are quite hardy in the Arboretum but *P. Aubertii* appears to be the more satisfactory plant. When these vines are past blooming fragrant *Clematis paniculata* bursts into flower and the two make a good combination, providing a succession of blossoms from early August to late September. On Bussey Hill *Evodia Daniellii*, whose flowers are much beloved by bees, will soon be laden with broad clusters of blossoms; there, too, the Japanese *Clethra barbinervis*, first of the Pepperbushes to bloom, is already shedding its flowers. Fruits on the Rowan or Mountain Ash (*Sorbus Aucuparia*) and on the European Cranberry-bush (*Viburnum Opulus*) are showing color and the keys on *Acer ginnala* are becoming reddish. In the Shrub Garden different Hypericums, Spiraeas and Trumpet-vines are in blossom, and late-flowering Hydrangeas are opening flat or ball-like heads of white. Alongside Meadow Road *Koelreuteria paniculata* continues a mass of rich yellow and a thousand candles of blossoms still illumine the last of the Buckeyes (*Aesculus parviflora*).

Albizia julibrissin rosea. A low, broad specimen of this wide-spread Asiatic tree, the Pink Siris or Silk-tree, is in blossom on Bussey Hill. The foliage in form, texture and appearance is like that which the popular mind associates with Mimosa, being pinnate with hundreds of small pinnae. The flowers are borne in stalked heads which are produced many together in the topmost leaf-axils of the current season's growth. The sepals and petals are inconspicuous and are dominated by the tasselled crimson-pink passing to pink stamens which are long out-thrust, tipped with tiny yellow anthers, and beautiful. The flowers stand above the foliage and being so different from those of any other plant attract great attention. The native country of this tree is doubtful. It is found widespread in Asia from Persia through China to southern Korea, has been widely planted in the warm-temperate and subtropical parts of the world and in this country is found naturalized from Virginia to Florida and Louisiana. In the type the stamens are white and the flower less showy than that of the variety *rosea* which is also the hardier tree. The origin of the plant in the Arboretum affords a good illustration of the importance of obtaining for northern gardens types which grow in the coolest regions they can withstand. The particular tree was raised from seeds collected in the garden of the Chosen Hotel at Seoul, Korea, by E. H. Wilson in 1918. It grows wild in the southern parts of the Korean peninsula but appears quite at home in the more severe climate of the central region. A few seeds only were collected and seedling plants were set out in the Arboretum when about four years old; several were killed the first winter but one came through with but slight injury and since that time has not suffered in the least. From its behavior during the last seven or eight years there seems reason to believe that this Korean type will prove a useful and valuable addition to gardens. It has a long flowering season, continuing in blossom throughout August. *Albizia* is a member of a tropical tribe of the great family Leguminosae and it is astonishing that this tree should be able to withstand New England winters. Apparently it is happy in fully exposed situations, where good drainage and a sandy loam prevail.

Stewartia koreana is again in blossom near the old White Pine trees on Bussey Hill. It is flowering much more freely than last year and its distinctive characters are more obvious. The flower is fringed, pure white, from $3\frac{1}{2}$ to 4 inches in diameter, flat and saucer-like with the ovary and stamens rich yellow. The leaves are ovate-elliptic, shining bright green with impressed veins and rounded base. It is a more cheery looking plant than its close relative, the Japanese *Stewartia pseudocamellia*, which has dull green leaves, longer and narrower at the base, less prominently impressed veins and flowers more cupped. The Korean *Stewartia* is showing remarkable vigor; it has suffered no winter injury and as the tree matures will doubtless bloom as freely as any of its tribe.

Heather or Ling (*Calluna vulgaris*) in its various forms is blossoming in the Shrub Garden and elsewhere. Among low-growing ground covering evergreens none is more beautiful than this plant so dear to the heart of every Scotchman. There are a great many forms, dis-



A Good Summer-flowering Shrub, *Sorbaria arborea*

tinguished by their habit of growth and color of blossoms but one and all are equally lovely. The erect, leafy shoots bear in abundance axillary flowers which vary in color from pure white and pink to crimson-purple. Heather is a sun-loving plant but in these latitudes unless favored by good snowfalls it, like all low-growing evergreen ground-covers, needs protection from the latter half of January until April. Boughs with salt hay or coarse herbage sprinkled over make a light and efficient protection. Heather is an acid-soil plant which does not transplant any too well from open ground and should, therefore, be grown for the purpose in pots. It is easily propagated by cuttings taken from August to mid-September and inserted in sand under glass. If allowed to grow naturally, it becomes straggling and hummocky and is apt to die in patches; the same obtains when growing in the shade. To avoid this the Arboretum practice is to shear it each spring thereby keeping it low and mat-like. In the British Isles, particularly in the northern part, in Scandinavia and elsewhere the Heather covers enormous areas of moorland and mountainside and in August presents one of the floral spectacles of northern regions. Although the plant covers vast areas in Europe and extends far into northern latitudes, Heather unlike many other boreal types is not known to grow on this continent. About the middle of last century it was reported from Nantucket and later from several other isolated places in New England. Close investigation, however, has shown that in each instance there is every reason to believe it had been introduced. In fact, today, authorities have no hesitation in saying that so far as the discoveries in New England are concerned one and all are simply escapes from cultivation.

Sorbaria arborea is the tallest growing and the most handsome member of a small group of summer-flowering shrubs closely related to and by some authorities included under *Spiraea*. They differ in having large pinnate leaves somewhat similar to those of *Sorbus*, hence the generic name. *S. arborea* is an almost tree-like shrub, growing fully 15 feet tall and forming a broad, fountain-like mass well furnished with large dark green leaves. The flowers are pure white borne hundreds together in terminal much-branched plumose panicles, each 12 to 18 inches long and correspondingly broad. The panicles are nodding and when in blossom the whole shrub is a cascade of pure white. This is a good plant for a large garden and is best accommodated in a moist place, being particularly happy at the side of a pond or stream where it can obtain an abundance of water and its beauty be seen to advantage. A native of western China, this *Sorbaria* was introduced into cultivation in 1913 by E. H. Wilson. A fine specimen may be seen among the Hickories on Center Street Path and nearby are growing several related species, including *S. sorbifolia*, widespread in northeastern Asia and naturalized in many parts of New England.

E. H. W.

These Bulletins will now be discontinued until October.

ARNOLD ARBORETUM
HARVARD UNIVERSITY

BULLETIN
OF
POPULAR INFORMATION

SERIES 3. VOL. III

OCTOBER 16, 1929

NO. 16

The phenomenal drought which Massachusetts in common with other states has endured will long be remembered for it caused grave anxiety among all who garden. In late June the Arboretum enjoyed one good rainfall but not another worth mentioning until October 2nd. For fully two months supplying water to suffering trees and shrubs was the principal work engaged upon. Fortunately, there was no great heat but at the height of the drought it looked as if a great many plants must die. Thanks to the water stored from the heavy rains of spring the trees suffered but little and as autumn arrived a general freshening among all woody plants was noticeable. Today it is difficult to realize that extreme drought has been experienced. The power of resuscitation enjoyed by plants is, indeed, marvelous.

The pageant of autumn coloring in New England is almost commonplace, yet nowhere in the world is it more brilliant or more abundant. On every side the gaiety of coloring is redundant as if Nature happy in a season's work well done was celebrating in joyous mood. Trees, being the dominant feature of the landscape, stand forth most conspicuously and with a little study it is easy to recognize the majority of native forest trees by the color of their autumn robes. As with the color of fruits, so with autumn tints in general, they are fixed in character, the same individual producing each successive season the same colors. The Poplars, Birches, Elms (with one Oriental exception), Hickories and Tulip-tree change unfailingly to yellow tones, varying from rich yellow to orange-yellow. Beech and some other trees pass from yellow-orange to golden bronze and russet. In the Oaks, the Swamp White, the English, and the Chestnut Oak, the foliage changes to more or less leather-brown tints; the White Oak in a majority of trees gives a splendid splash of scarlet, passing to crimson. In the Red and Black Oaks red to crimson tones prevail. As the autumn colors persist long on Oaks they are the most glorious feature of New England's countryside. In Maples every conceivable color

obtains. In the Striped-bark Maple the autumn foliage is pale to clear yellow; the Scarlet Maple may be yellow, orange, deep red, or crimson-purple, but the greatest variation is seen in the Sugar Maple where every color from pale yellow through orange to pink and crimson may be seen on half a dozen individuals often growing side by side. Of exotic species no Maple has more beautiful autumn foliage than *Acer ginnala*, a small tree of more or less shapeless habit with abundant coarsely toothed leaves which change from salmon to the richest tones of red. The White Ash of all trees gives the greatest show of vinous purple. No other large native tree presents this color and it can be picked out in the autumn so far off as one can distinguish color. Occasionally one notes a White Ash tree that is all yellow, a color that is invariable in its close relatives, the Red and Green Ash. Glorious are the colors of the Sassafras, varying from yellow and orange to salmon-red. The Pepperidge or Tupelo (*Nyssa sylvatica*) of all native trees gives the greatest show of pure crimson in the fall. The true Larches change to yellow but are far outshone in autumn beauty by the Chinese Golden Larch (*Pseudolarix amabilis*), which early assumes tones of old gold to golden-bronze almost unique among trees. Its remote relative, the Ginkgo, changes to the richest yellow and where these trees are associated with Pine, Hemlock, Spruce and Fir the effect is heightened since the latter stand out as black-green and gray-green foils. Of the lesser trees none is more lovely in autumn garb than the Flowering Dogwood for every color is present in its foliage among which nestle clustered scarlet fruits. Of all native flowering trees none has greater ornamental value than the Flowering Dogwood. In the Arboretum, where all the hardy native trees are assembled and where, too, may be found a large percentage of the trees of boreal regions that can be grown in the climate of Massachusetts, the autumn coloring is unusually rich and varied and no more delightful stroll can be taken than through its grounds in October.

Autumn coloring is by no means confined to trees; indeed, it is general among the native shrubs of eastern North America. Comparatively few native trees bear ornamental fruits, whereas, such are common among shrubs. Viburnums as a tribe are rich in all the qualities that make an ornamental shrub for they are of good habit, free-flowering and fruiting, and deserve far greater attention than is now accorded them. Among autumn foliage that of *Viburnum prunifolium* with its rich vinous purple shades is not exceeded by any shrub. On its heels comes the Nannyberry (*V. lentago*) but, perhaps, less brilliant in color. Similar, too, is the autumn foliage of *V. cassinoides*. In this species and also in *V. prunifolium* the fruit as it ripens passes from white through shades of pink to blue-purple. The Arrowwood (*V. acerifolium*) so common in woodlands has pale pinkish to claret-colored foliage distinctly translucent in autumn days. In sheer autumn brilliancy the Sumacs perhaps exceed other groups of native shrubs and in none is a brighter ruddy crimson seen than in *Rhus copallina*. Evonymus and Honeysuckles give an abundance of fruit but little autumn color; the Barberry tribe, however,



A splendid native shrub, *Viburnum prunifolium*

excel in both qualities. In a group so large it is hard to single out the most desirable but in the Arboretum at the moment none are more beautiful than *Berberis diaphana* on Centre Street Path and *B. circumserata* on Bussey Hill. These two Chinese species are both low and compact in habit, forming rounded masses much broader than tall with moderately large coarsely toothed leaves of various shades of orange to purplish crimson among which hang ovoid scarlet fruits. The fruit on the different Blueberries and Huckleberries has long since disappeared but their autumn tints and especially those of the High-bush Blueberry are richly developed. Azaleas are free-flowering and beautiful giving in variety a ten weeks' succession of blossom in spring and early summer, and most of them have warm tinted autumn foliage. Handsomest of all are the blackish purple tints of *Rhododendron roseum* and the crimson to purple hues of *R. Vaseyi*. In the Flame Azalea (*R. calendulaceum*) the autumn colors are almost as varied as those of the flowers in spring while the leaves of the Swamp Honeysuckle (*R. viscosum*) vary from luminous orange to lustrous bronze. The Korean *R. poukhanense* effects bronzy purple tones, whereas orange, salmon-red to crimson prevail on Kaempfer's Azalea. The Enkianthus boast no beauty in their fruits but in their autumn foliage they rank among the loveliest of all shrubs. In *E. campanulatus* all shades from orange through salmon-red to purplish crimson may be seen and that favorite of the Japanese, *E. perulatus*, better known as *E. japonicus*, with its glowing orange through red to crimson tones may be acclaimed superbrilliant. On Bussey Hill the Azaleas and Enkianthus may be seen in their autumn dress and nearby Cotoneasters in rich variety are strung with brightly colored fruits. Especially ornamental are *C. Dielsiana*, *C. divaricata*, *C. horizontalis* and *C. apiculata*. The Callicarpas possess little beauty of flower and no particular merit in foliage but their lustrous, pale lavender fruits clustered in the leaf axils are as lovely as they are unique in color. Spiraeas, Deutzias, Philadelphus and their ilk are in a measure like herbs inasmuch that while they give an abundance of blossom they possess no ornamental qualities in fruit or autumn foliage. In the ordinary garden there is little place for trees but always a place for good shrubs and in selecting these attention should be paid not only to their flowering qualities but to their habit of growth, to the character of their fruits, and their autumn tints. Were this more commonly practised the shrubs about homes would be of a more varied and much more highly ornamental character.

The Hawthorns on the easterly and southerly slopes of Peters Hill are laden with fruit and wellworth coming a long distance to see. Hawthorns possess a strong family likeness but they are, nevertheless, strongly characteristic. The habit of growth, the long horizontal zig-zag branches far outthrust and laden with pendent masses of fruits of varying shades of red to purplish crimson are most impressive. The season of ripening and period of retaining their fruits varies enormously. *Crataegus arnoldiana*, the first of its tribe to ripen fruit is in full glory in late August and the fruits are shed by the end of September; others ripen in succession and some carry their fruits far into the winter.

E. H. W.

ARNOLD ARBORETUM
HARVARD UNIVERSITY

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OCTOBER 30, 1929

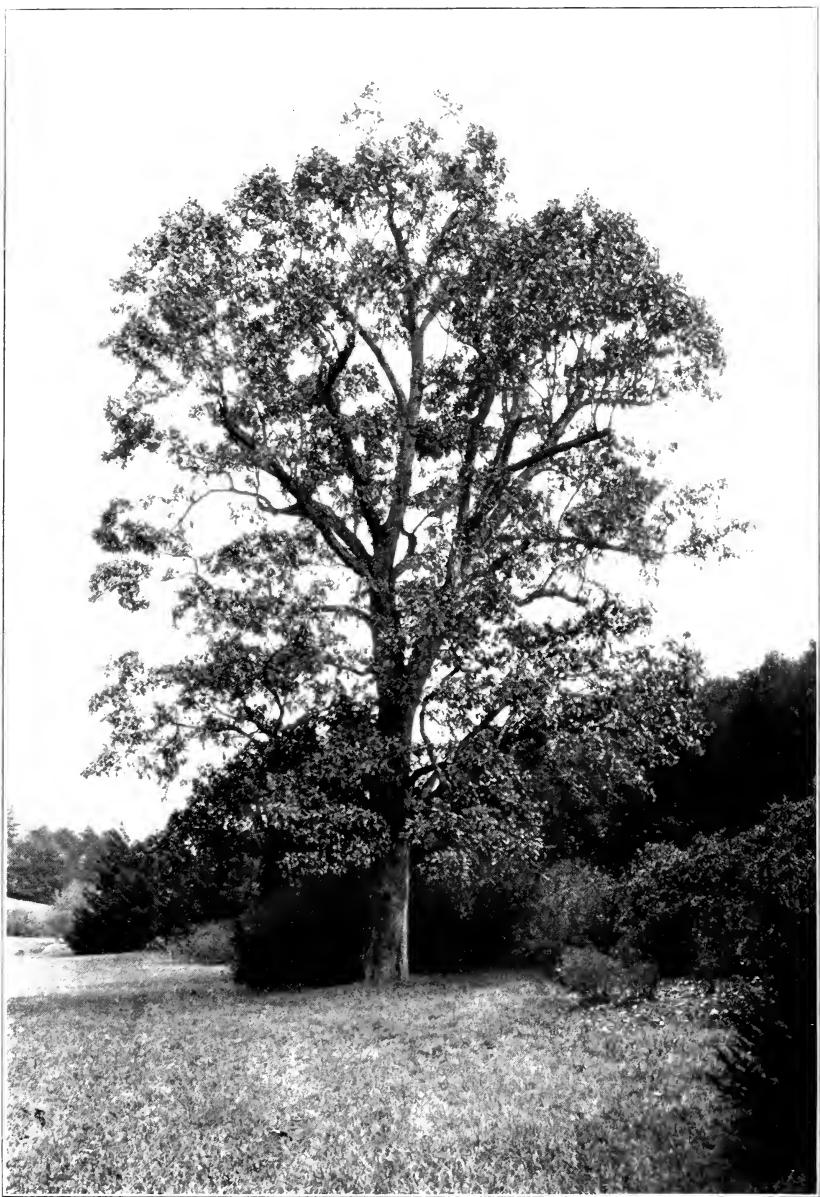
NO. 17

Oaks best loved of trees by the Anglo-Saxon race are the glory of northern forests. They have been associated with our history from immemorial time and the veriest tyro among tree lovers recognizes an Oak at a glance. They form the genus *Quercus* and the members are widely distributed through northern regions dipping into the tropics of both hemispheres. A majority of the species are evergreen, quite a few of which are natives of North America but not a single evergreen Oak has proved hardy in the Arboretum. This is a great pity since one and all are beautiful umbrageous trees, none more so than the Holm Oak of Europe (*Quercus Ilex*) of which Kew Gardens boasts magnificent specimens. In North America and Canada some 85 species, of which 28 are shrubs, and about 60 natural hybrids are recognized. In the Arboretum 60 species and hybrids are successfully grown, the collection being perhaps the finest of the tree groups. New England is well represented in Oak species; in the Arboretum itself 6 are native and Oaks are the principal feature of the mixed woods which clothe its low rocky hills. When the Arboretum was founded in 1872 the Oak trees through poverty of soil and excessive pasturage showed marked signs of deterioration, many of them were stag-headed and dying at the top. Professor C. S. Sargent submitted them to the Des Cars' system of pruning, which consists of thinning out the lesser and pollarding the main branches. The beneficial result of this treatment is remarkable, especially among the White Oaks; indeed, it is difficult to tell without close inspection that they have been submitted to drastic pruning. In addition to the native species all that will withstand the climate are flourishing and there are trees now 60 feet and more tall raised from seeds planted about fifty years ago. The idea is current that Oaks grow slowly, but the experience of the Arboretum is that they grow faster than the majority of hardwood trees. The erroneous notion of slow growth is probably responsible for their being much neglected by nurserymen. Their beauty as specimen trees for lawn and meadow is obvious to all and their value as roadside trees is well demonstrated by the magnificent

avenues of Red Oak which line the Parkway in the vicinity of Jamaica Pond. The best way of raising Oaks is by planting the acorns in flats so soon as they are ripe and transplanting the seedlings when a few inches high. As Oaks form a stout taproot it is necessary to transplant them frequently in order to develop a fibrous root system. If properly grown from their youth, most of the Oaks transplant with ease but some, the common White Oak in particular, are notoriously difficult to move. Oaks with their stout boles, rugged bark, massive branches and widespread crowns are beautiful at all seasons of the year. In the brilliancy of their autumn tints they are not excelled by any trees and the soft greens, grays and pinks of their unfolding foliage and flowers is one of spring's greatest delights.

Red and Black Oaks are peculiar to North America and are not found elsewhere in the world. They are characterized by the fruit taking two years to mature, and many of them are distinguished by a hair-like process which protrudes from the margins of the leaf. Of these 20 species and hybrids are growing in the Arboretum, prominent among them are the northern Red Oak (*Q. borealis*), the Pin Oak (*Q. palustris*), the Scarlet Oak (*Q. coccinea*), the Black Oak (*Q. velutina*) and the Shingle Oak (*Q. imbricaria*). The northern Red Oak is best known as *Q. rubra* and extends north to the foothills of the Laurentians in Quebec, being the most northerly species in those latitudes. To this same group belongs the scrubby Bear Oak (*Q. ilicifolia*) abundant in rocky places on the Blue Hills and elsewhere. These Oaks assume orange-brown or scarlet to crimson-purple tones and where they grow on sandy soil or in rocky places the color is especially brilliant. Several of this group, especially *Q. coccinea* and *Q. borealis*, do well in the British Isles but the pernicious European practice of grafting them on the native White Oak has led to their being less common than they otherwise would be. The Shingle or Laurel Oak (*Q. imbricaria*), which is readily distinguished by its descending, over-lapping branches and oblong, smooth margined leaves, is exceedingly well-suited for making tall hedges and since it holds its brown dead foliage until spring gives a sense of warmth throughout the winter months. Its value as a hedge plant has been well demonstrated at the Experimental Farm, Ottawa, and nurserymen would do well to raise this Oak in quantity for this purpose.

White Oaks are found not only in North America but in Europe and Asia also. They are distinguished by the acorn maturing in one season and by the absence of any hair-like outgrowths from the margin of the leaves. Of the American species and hybrids some 25 are growing in the Arboretum, the best known of which are the common White Oak (*Q. alba*), the Swamp White Oak (*Q. bicolor*) and the Burr Oak (*Q. macrocarpa*). The White Oak with its relatively short but very thick trunk and its widespread flattened-round crown of massive branches and rich scarlet autumn tints is one of the noblest of northern trees. Where the soil is rich and it has ample room in which to grow this is one of the outstanding trees of the



A rejuvenated White Oak, *Quercus alba*

country-side. Curiously enough it has been found virtually impossible to grow this Oak in the British Isles where only one or two small trees are known. The Swamp White Oak with taller trunk but less wide-spreading crown is found as far north as the St. Lawrence Valley in southern Quebec, being the most northerly of White Oaks in these latitudes. The Burr Oak with its handsome, mossy capule is widespread and grows taller than any other White Oak. In the rich bottomlands of southern Indiana and Illinois it sometimes reaches the great height of 170 feet with a trunk 20 feet in girth clear of limbs for 75 feet. It has a wide distribution, being found as far north as Nova Scotia and New Brunswick; it is the common Oak in Wisconsin and ranges farther to the northwest than the other Oaks of eastern North America. Two very interesting White Oaks growing well in the Arboretum are the Overcup Oak (*Q. lyrata*) and the Post Oak (*Q. stellata*).

Asiatic Oaks. Of the 9 species of deciduous leaved Oaks native of China, Japan and northeastern Asia in general, 7 are growing in the Arboretum, where one and all do well. The most valuable of these Asiatic Oaks is *Q. mongolica*, the Oriental relative of the European *Q. robur*. The typical species is abundant in Manchuria and Korea but has only recently been established in the Arboretum where it was raised from seeds collected in 1917 by E. H. Wilson. Its Japanese form *Q. mongolica grosse-serrata*, more generally known as *Q. crispula*, the Nara of the Japanese, is famous for its timber which approaches in quality that of the American *Q. alba*. The species, widely known as *Q. glandulifera*, but correctly as *Q. serrata*, is peculiar in that it is the only Asiatic Oak which assumes red to crimson autumn tints; it grows freely in the Arboretum. The corky-barked *Q. variabilis* and its close relative *Q. acutissima*, peculiar as being the only deciduous leaved Oaks outside of the Red and Black Oak section which take two years to mature their acorns, are doing well. The Japanese Tan-bark Oak (*Q. dentata*) often called the Daimyo Oak, remarkable for its very large leaves, grows less freely than other Asiatic species. These with *Q. aliena*, common to China, Japan and Korea, may be seen on the eastern slopes of Bussey Hill. The largest trees were all raised from acorns collected in 1892 by Professor Sargent on his most fruitful expedition to Japan.

European Oaks with the exception of the Hungarian Oak (*Q. cerris*), one of the handsomest White Oaks, do badly in eastern North America. The English Oak (*Q. robur*) grows rapidly for the first twenty years of its life but afterwards becomes stunted. It has been abundantly planted about the old villages on Cape Cod, where here and there a passable specimen may be seen. The Turkey Oak (*Q. cerris*) exists in the Arboretum but in the town of Brookline one or two good specimens may be seen. A supposed hybrid between *Q. robur* and the American Chestnut Oak (*Q. montana*) and known as *Q. Sargentiana*, grows well and is represented in the Arboretum by a number of fine trees.

E. H. W.

ARNOLD ARBORETUM
HARVARD UNIVERSITY

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The Firs and Spruces are among the most important timber trees of the northern hemisphere and the most important of ornamental narrow-leaved evergreen trees. In boreal regions they cover vast areas often forming pure forests enormous in extent. In both hemispheres the Firs find their southern limits just within the Tropic of Cancer, but the Spruces keep within the temperate regions. Both Firs and Spruces in northern regions grow at sea level but in temperate, and more especially warm-temperate regions, they are restricted to the higher mountains, the Firs being more alpine in character than the Spruces. The Firs form the genus *Abies* and the Spruces that of *Picea*. They bear a close resemblance one to another, indeed, there is much confusion in the lay mind as to their distinctive characters. In the Firs the cone is always erect and falls to pieces when ripe; in the Spruces the cone is pendulous and does not disintegrate at maturity. Another distinction is that in dried specimens the leaves of Spruce always fall from the branches, whereas those of the *Abies* remain attached. As timber producing trees the Spruces are more important than the Firs but for ornamental purposes the opposite obtains. All are tall trees, in some species approaching 200 feet in height and ranking among the loftiest and most impressive of Conifers, but in the boreal regions they are reduced to scrub. Lovers of regions where the air is pure and where they enjoy abundant moisture at the root, neither Firs nor Spruces are suitable for planting in cities or manufacturing towns. There are species suitable for almost any climate where at least a moderate rainfall prevails but none are desert plants, although a number withstand extremes of both heat and cold. Obviously those native of the mountains bordering the tropics are not suitable to the gardens of New England, neither do the more alpine species thrive at sea level. Moreover, the natives of different regions of the world behave quite differently under cultivation in eastern North America. Speaking in general, the more than fifty years experience of the Arboretum is that the Firs and Spruces of Europe and western Asia, those of Japan and Korea, and

those of Colorado grow well in Massachusetts. In western North America grow some of the noblest, tallest, and most beautiful of all the Firs but none of these is at home in the Arboretum. The two species of Fir (*Abies balsamea* and *A. Fraseri*) native of eastern North America are not happy in the Arboretum though Fraser's Fir does splendidly a few miles to the north. Of the three native species of Spruce (*Picea glauca*, *P. mariana* and *P. rubra*) the first-named only does moderately well in the Arboretum, the summers are a little too hot and dry for its well-being. The other two merely exist and are not worth their board and room. The Arboretum's work in the acclimatization of Conifers during more than fifty years ranks among its most important contribution to dendrology and landscape gardening. A visit to the Pinetum at any season of the year is interesting and instructive to all lovers of these trees since they may see for themselves how particular species behave in the climate of Massachusetts and judge which are of greatest value.

Of Firs or Silver Firs, as they are usually called, there are growing in the Arboretum twenty-five species and sixteen varieties. Of these, four species and three varieties are native of Europe and western Asia, five are Chinese, eight with four varieties are indigenous to Japan and Korea, six species and four varieties have their home in mid-western and western North America, while two species and five varieties are native of the Atlantic seaboard. Of the twenty-five species, eleven appear to be first-class ornamental trees but of these *Abies chensiensis*, *A. Fargesii* and *A. recurvata* are comparatively new introductions from China, and *A. holophylla* and *A. koreana* from Korea which have not been with us sufficiently long for a definite opinion to be expressed. The remaining six species of Fir have proved their value over half a century. One only of these is American, two are Japanese, and three hail from southwestern Europe and western Asia. First of these six Firs must be placed *A. concolor*, the Colorado White Fir, of which there are specimens in the Pinetum more than 65 feet tall, symmetrical in outline with branches sweeping the ground and well clothed with long spreading glaucous gray leaves. A worthy partner of this White Fir is the Nikko Fir (*A. homolepis*, more widely known as *A. brachyphylla*), a Japanese species with wide-spreading branches densely furnished with black-green leaves silvery on the under surface. The three Eurasian Firs (*A. Nordmanniana*, *A. cilicica* and *A. cephalonica*) are of about equal value, each and several being of distinguished appearance and highly ornamental. The sixth Fir is *A. Veitchii* of Japan, a tree less tall than either of the above with a smooth, pale gray bark and short, horizontally spreading branches clothed with dark green leaves silvery on the lower surface. Of the Chinese Firs *A. Fargesii* with its mahogany-purple shoots and long black-green leaves silvery on the under surface is of much promise. So, too, is *A. koreana*, which in habit of growth somewhat resembles its relative *A. Veitchii*.

The Spruces are richer in species than the Firs but from the point of view of ornamental horticulture less valuable since they do not



The Colorado White Fir (*Abies concolor*).

grow old so gracefully. One and all have weak points, not least of which is their habit of sooner or later losing their lower branches. From the point of view of producing timber this is a great advantage but for ornamental purposes it is a bad defect. In the Arboretum some twenty-six species and sixty-one varieties of Spruces are growing but of the varieties no fewer than forty-one are referable to the Norway Spruce (*Picea Abies*). Of the twenty-six species, eleven give promise of being first-class ornamentals but of these the Chinese *P. asperata*, *P. Balfouriana* and *P. Wilsonii* have not been in cultivation long enough for a definite statement to be made and the same is true of the Japanese *P. Koyamai*. However, in reference to these four species it may be said that they promise well; they grow freely and have withstood with impunity the severest of New England winters experienced since their introduction some twenty years ago. Of the seven remaining Spruces, each of which has been tested for half a century in the Arboretum, the Caucasian *P. orientalis* ranks first in ornamental qualities. This tree has short, shining dark green leaves, densely arranged on the plumose branches which spread outward and downward and are upturned at their extremities. The whole tree is a symmetrical pyramid of lustrous dark green at all seasons of the year. Next in merit ranks the flat-leaved Serbian Spruce (*P. omorika*), a narrow tree with horizontally and down-spreading branches tilting upward at the tips and clothed with black-green leaves silvery on the under surface. This is a rather narrow tree but of arresting character. Its weak point is that the leading shoots, especially of young trees, suffer from boring insects. The Norway Spruce does not grow old gracefully, becoming scrawny and where it is exposed to the strong winds its leading shoots are killed and the tree dies from the top downward. However, under favorable circumstances for fifty to seventy-five years its ornamental qualities can be depended upon and if planted on a lawn where it will have plenty of room its lower branches will remain sweeping the ground for a longer period than those of any other Spruce. This well-known tree is, when in good health, strikingly beautiful with widespread horizontal branches from which long branchlets hang suspended. Probably of all Spruces none has been more widely planted than the Colorado Blue Spruce (*P. pungens*), especially its form Koster's Blue (*coerulea*). Undoubtedly, this Spruce has been greatly overplanted and, moreover, has been placed in positions totally unfitted for it, but these are faults of the landscape gardener rather than of the tree itself. Rightly placed, a Blue Spruce is a thing of beauty and for northern gardens and parks is well entitled to rank in the first half dozen Conifers. Its neighbor, *P. Engelmannii*, is also a first-class ornamental. At one time it was hoped that this species would hold its lower branches permanently when placed in open situations but experience has shown that it is no more constant in this than the Blue Spruce. In the neighborhood of Boston the summers are a little too hot for the well-being of the Canadian Spruce (*P. glauca*) but the Japanese Tiger-tail Spruce (*P. polita*) is quite at home. With its stout, pungent, dark green leaves this tree has a rather sombre appearance but is undeniably handsome.

E. H. W.

These Bulletins will now be discontinued until April of next year.

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